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ABSTRACT

This federally funded survey, undertaken to develop a model of a decentralized local area manpower information system for meeting program management needs in urban areas, discusses the need for this system, and the origins and uses of manpower data. Characteristics and parameters of such a system, alternative models of information systems, and a strategy for sequential development toward a merged individual file system are topics covered. Feasibility studies, conducted through a series of interviews with agency officials and examinations of local operating records, indicated the necessity for a progressive, sequential approach toward systems development. Recommendations are made at each stage for the merging of information from cooperating agencies and its computerization, including storage and retrieval. (AG)

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FINAL REPORT

MANPOWER ADMINISTRATION, U.S. DEPARTMENT OF LABOR
CONTRACT NO. 81-40-70-06

THE MANAGEMENT OF MANPOWER PROGRAMS IN URBAN AREAS: AN INFORMATION SYSTEM

LOUIS LEVINE, PROJECT DIRECTOR

KENNETH W. MASTERS

BERNARD R. SISKIN

SEPTEMBER 1971

VT 019457

INSTITUTE FOR RESEARCH ON HUMAN RESOURCES
THE PENNSYLVANIA STATE UNIVERSITY
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The Pennsylvania State University
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TABLE OF CONTENTS

		Page
PREFACE		i
INTRODUCTION		1
CHAPTER I.	PRESSURES FOR MANPOWER PROGRAM MANAGEMENT INFORMATION	6
	Paucity of Local Area Program Management Information	6
	Impact of Manpower Program Developments in the 60's	10
	"New Federalism" and Manpower Program Management	17
	Recently Proposed Federal Manpower Legislation	19
CHAPTER II.	ORIGINS AND USES OF MANPOWER DATA	23
	Manpower Data and Programs Services	25
	"Environmental" Manpower Data and Program Management	28
	The Organization of Administratively Derived Data	32
	The Hierarchy of Data Use within the Administering Agency	36
	Local Office Records for Manpower and Related Services	39
	Program Management Levels Above the Local Office	50
CHAPTER III	MANPOWER MANAGEMENT DETERMINANTS OF DATA NEEDS	60
	Data Implications of Management Authority	60
	Major Components of Program Management Function	65
CHAPTER IV.	THE PARAMETERS OF A MANPOWER INFORMATION SYSTEM	88
	Characterization of Information Systems	88
	Government Interest in Local Area Information Systems	92

		Page
	Information Systems and the Manpower Administration	99
	Other Considerations Shaping a LAMMIS	110
CHAPTER V.	ALTERNATIVE MODELS OF INFORMATION SYSTEMS	120
	Current Structure of Information Flows	122
	Total Automated Centralized Records	136
	Merged Individual File System	147
CHAPTER VI.	STRATEGY FOR SEQUENTIAL DEVELOPMENT TOWARD MIFS	156
	Initial Stage	162
	Intermediate Stage	166
	Fully Developed Stage	175
	Organizational Aspects	177

APPENDICES

APPENDIX A.	TECHNICAL ELEMENTS IN SEQUENTIAL DEVELOPMENT TOWARD A MERGED INDIVIDUAL FILE SYSTEM (MIFS)	A-1
APPENDIX B.	EXAMPLES OF CURRENT MANPOWER INFORMATION FLOWS	B-1
APPENDIX C.	FREQUENTLY USED ACRONYMS	C-1
APPENDIX D.	INTERVIEW CONTRIBUTERS TO THE PROJECT	D-1

LIST OF FIGURES

Figure		Page
1.	ESARS Concept and Data Flow	16
2.	Philadelphia SMSA and Pennsylvania BES Administrative District 1	41
3.	Philadelphia County Board of Assistance District Boundaries, July, 1970	46
4.	Flow Process in Entrepreneurial Activity	62
5.	Manpower Program Management Activities	67
6.	Levels of Information Processing, Non-Computer Bank	128
7.	Levels of Information Processing, Computerized Data Bank	129
8.	Flow of Characteristics Documents--Major Programs	134
9.	Basic Information Flow For Client Service	138
10.	Merged Individual File System	148
11.	Outputs of Merged Individual File System From Client Data Input	153
12.	Allocation of Systems Responsibilities Between Interagency Board and Task Force	182

APPENDIX A

1.	Task Schedule For Strategy	A-10
2.	Scheme For Handling Social Problems of Change	A-11
3.	Decision Analysis	A-12

Figure Page

4. Data Analysis A-13

5. Noncentralized Random Terminal Access System (NRTAS) A-14

6. Continuing Sample Plan A-15

APPENDIX B

1. Manpower Administration Information Flow . . . . . B- 4

2. CEP Management System . . . . . B- 5

3. Concentrated Employment Program: Client-Source Document Flow, Daily Individual Record Flow B-10

4. Employment Service Client Source Document Daily Flow B-19

5. Flow of Processing of Data B-20

PREFACE

This survey, which undertook to develop a model of a local area manpower information system capable of meeting program management requirements, is obviously greatly indebted to many individuals whose views and ideas, as well as wise counsel, made the realization possible. Several years spanned the interval between the initiation of the project and its completion. During that time important program and administrative changes took place. Yet this passage of time and the emerging experience seemed only to confirm the needs and even add to the urgency for examining this subject. Perhaps no one contributed more to the conception of the project in its early stages than William B. Hewitt, deputy associate manpower administrator in the Office of Planning, Evaluation, and Research of the U. S. Department of Labor.

Although the survey focused on local area program management and a supporting manpower information system, government administration at the federal and state levels was clearly involved. Discussions and interchange of ideas took place between project staff and many responsible officials at these levels. Among those whose influence was most felt at the Pennsylvania state government level in Harrisburg were John M. Clark and Freeland G. Manahan of the Bureau of Employment Security; Daniel Bernstein of the Department of Public Welfare; and Francis X. Splane of the Bureau of Systems Analysis in the Governor's Office of Administration. Those who had most impact on the survey

at the federal level in Washington were Robert Beasley and Adolph Wansong of the Manpower Administration in the Department of Labor; Donald A. Roache of the Division of State Systems in Health, Education, and Welfare; Martin Lieman, of the Office of Economic Opportunity; and Roye Lowry of the Office of Management and Budget.

Above all else the survey findings and conclusions stress the importance of grass roots determination of the content of a manpower information system for program management. It is not surprising, therefore, that special appreciation should be expressed to those officials in the Philadelphia area who gave so much of their time to the advancement of the project. In this respect Charles P. Connolly, district manager of the Philadelphia BES, was a tower of strength. Vital also was the assistance rendered by Richard Glanoff of the mayor's Office of Manpower Utilization. Others whose consultations call for particular recognition are Irwin Chickinsky of the WIN office; Carl Francis of the CEP office; Louis Rublin of the District Office of Public Welfare; and Daniel Fascione, formerly of the Board of Education.

Despite the fact that the project staff learned much from interviews and on-site observation and borrowed heavily from a large number of sources, the findings and recommended course of action set forth in this report are those of the staff alone. Different individuals participated at various stages in the project temporarily, but professional responsibility for the survey and the report belong to the undersigned.

Louis Levine, project director
Kenneth Masters
Bernard Siskin

INTRODUCTION

The major determinant which gave rise to the survey on which this report is based is the great importance that has recently been assigned to the local implementation of manpower programs and policies and the local delivery of manpower services. In the last few years it has become quite evident that a considerable gap exists between manpower goals and objectives and manpower performance and achievement. Nowhere is this more evident than at the local area level--and nowhere is it more necessary that this gap be reduced.

With the shift of emphasis to manpower operations, activities, and services has also come increased recognition that decentralization of responsibility is critically important. Since what takes place on the local scene must ultimately determine the evaluation of the effectiveness of manpower programs, attention has been directed to local area organization, structure, resources, and facilities. This means that program management, in its most fundamental and broad gauged sense, is being subjected to sharp scrutiny. It may well be that, in the final analysis, the success or failure of manpower programs turns on the availability and exercise of management capabilities.

Although numerous elements must combine before positive and constructive program management can be effected, the most important of these is sound information to provide the basis for an intelligent course of action. Current, accurate, and comprehensive manpower information, especially adapted to local area use, has become a vital

need for the delivery of manpower services. Such information, specifically organized to serve as an instrument for program management, has been reserved to the state central administrative office, while only staff direction and routine supervision have been delegated locally.

The deficiency of local area manpower data has been a matter of concern for some years, especially with the greatly expanded programs requiring the delivery of a broad range of comprehensive manpower services in local areas. Consequently, more emphasis has been given to the need for manpower information derived from household interviews, with the local area as the base of reference. By the same token the importance of administratively derived information locally has received more recognition. One survey[1] designed to explore the potential of data resources for manpower development and service programs in an urban poverty area inventoried and catalogued locally available data in North Philadelphia, Pennsylvania, giving particular attention to information derived from operating agencies. When the current project undertook to examine the feasibility of creating a central, coordinated manpower information system for an urban area which would utilize data obtained from operating records and be geared to meeting program management requirements, the earlier North Philadelphia survey was relied upon heavily.

Specifications originally drawn for the conduct of the present survey in Philadelphia, upon which this report is based,

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[1] Louis Levine and John Herbert Norton, Manpower Information for Urban Poverty Areas (University Park, Pa.: Institute for Research on Human Resources, The Pennsylvania State University, 1969). See Part I, Chapter 2.

have undergone considerable change. These contemplated a system in which there would be a flow of information from cooperating agencies to a central data bank--once agreement had been reached on items of information to be collected, standardization or uniformity in definitions, frequency of collection, etc. The initially conceived system, it was thought, would permit a single inquiry to activate several files within an integrated data base. Utilization of random-access equipment would permit extraction of selected information from individual records in a conglomerate file. It was expected that development of the simulated system would be the outgrowth of a series of individual meetings with appropriate local agency officials. In addition, examinations of the content, flow, and use of local operating records were to be undertaken and correlated with the interviews with agency officials.

Interviews and records examinations in Philadelphia were supplemented by interviews in Harrisburg with officials from different state departments and a review of all relevant reporting instructions and schedules there, together with similar interviews in Washington[2] and reviews of statistical reporting systems. The results of these surveys led to the conclusion that the integration of information from various cooperating agencies into a single record for an individual was neither feasible nor desirable. It was generally clear that technological feasibility was not an issue. Far more important were such considerations as confidentiality and invasion of privacy;

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[2]A partial list of individuals interviewed and the agencies with which they were associated is included in Appendix D.

statutory, legal, and administrative restrictions affecting the geographic areas of jurisdictions; definitions of programs, clients, and services; differences in authority and its allocation to various levels of government; and adequacy of financial resources. The survey experience, based on the interviews and records examinations, clearly pointed to the need for a consideration of alternative models of local area manpower information systems short of a completely centralized, integrated, and automated system. At the same time, the experience supported the conclusion that the current flows of manpower information did not constitute a system and were not remotely adequate for program management requirements. There was also increasing evidence that management officials were neither trained in the use of relevant manpower data nor generally informed as to their program management potentials.

It became necessary in the light of the survey experience to initiate another round of interviews, the substantive content of which was radically restructured, and the inquiries were specifically directed to a variety of alternative information system models. The chief realistic conclusion growing out of these interchanges of ideas (and taking account of constraints existing in the current situation) is that the creation and introduction of a true local area manpower information system for program management cannot result from a single action. Rather, it must be the product of a series of progressive, sequential stages. Even though the first stage is noncomputerized and the central reference feature is only the beginning of coordination, it is nevertheless an improvement over the current situation in which manpower information lacks both structure and rationale.

In each of the stages set forth in the report, recommendations are made for the merging of information from cooperating agencies and computerization of such information, including effective storage and retrieval.

CHAPTER I

PRESSURES FOR MANPOWER PROGRAM MANAGEMENT INFORMATION

Paucity of Local Area Program Management Information

The great preponderance of manpower information produced by the agencies in programs providing human resources and manpower services is an integral part of the delivery of these services. This information is generally found in the operating records--e.g., the case record prepared by the social worker, the registration record made up by the employment interviewer in the employment office, or a counseling record prepared by the counselor. The data are not recorded to be aggregated or to become part of a statistical reporting system of an informational system. Rather, they are obtained and recorded to be used in providing assistance to the individual client.

Only a small fraction of the information contained in operating records is organized and processed to become statistical data.[3] Even when the information is so used, the operating requirements establish the constraints which determine the character of the information. The limitations in the data may be due to the fact that statutes establishing the programs specifically exclude certain individuals from

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[3] For a brief summary of major characteristics and limitations of these data see Levine and Norton, op. cit., Part I, Chapter 4, pp. 83-94.

participating or set up various restrictions before services can be provided. Some weaknesses in the data may be attributed to budget restrictions or to the fact that the people processing the information or responsible for supervision of the processing are not trained in statistics.

The aggregation of information from operating records, and its processing as statistical data, are generally undertaken because the information may be more current than anything available from other sources or because it fills a gap in needed "universe" information about clients served or persons potentially in need of service. When the socioeconomic characteristics of the clientele are aggregated, the objective may be either that the data provide environmental information needed to diagnose needs with which the program should be concerned or that they serve as a social indicator. The summations of the number of jobseekers registered in an employment office over a period of time and classified by various personal and economic characteristics may provide a clue to the changing local unemployment situation or to shifts in employment opportunities.

Admittedly the aggregates are not as comprehensive as the universe obtained in a census or in a special household survey and thus may be regarded as only a partial substitute for broader universe data. The information does, however, have value for an analysis of the labor market.

When information from operating records is aggregated to indicate the types of services provided, the results flowing from such services, or the staff and cost inputs related to such services, the data are recognized to be administrative and useful for supervisory

and managerial purposes. Generally such summations are made to determine the allocation of staff and reassignment of staff resources; for preparation of budget estimates; and to account for expenditures. Most often the data are used in budget administration, viewed as a rather limited and narrow activity in the field of program management. Because the budget process is the major determinant of the need for summations of operating record information, the agencies and levels of authority directly concerned with budget preparation or the review and determination of budgets have traditionally established the character of program reporting, along with the number, frequency, and detail of reports.

In the majority of human resources and manpower services programs, the federal and state governments, through their executive agencies, have shared concern for the budget. The character of the aggregated information which emerges as the information system for the manpower programs is characteristically determined by the budget interests of the relevant federal or state agency at each level. Since the budget process has given minimum emphasis to the local area, little or no interest in the summarization of program data on a local area basis has been evident. Some federal reporting requirements, seeking to fix attention on the quality of services rendered or on the promptness with which they are delivered, have made state agencies responsible for providing summaries of relevant data for local areas. In such instances the data are meant to help facilitate improvement of program management and supervision and not merely to aid in budget administration.

Because program administration, particularly direct management and supervision, is usually the responsibility of the state agency, the tendency to incorporate program management data in the federal reporting system is not widespread. Additionally, because state agencies responsible for the administration of human resources and manpower programs are inclined to retain administrative authority in the state central offices, much of the program management information useful at a local level is not articulated in their information systems.

The lack of an organized system of manpower program management information undoubtedly derives to a great extent from the failure of the various levels of government responsible for program effectiveness to spell out the limits of their administrative responsibility. At the same time, limitations in the state of the art as applied to program management result in inadequate information systems even though the information technology presents no problems. The fact is that program management together with all its ramifications has only lately come into its own. There continues to be in many quarters--and perhaps especially in public administration--a considerable gap between conception and execution. Too often lip service is given to the need for linking authority and responsibility, which in the case of manpower services delivery can only take place locally. When authority is retained centrally, the local area is not likely to have an information system requisite for execution of local program management.

Another major explanation for locally inadequate manpower management information and the rarity of its systematization is

found in the process by which such information becomes available. Operations personnel obtain it in the course of their daily activities serving clients; their operating records are the source from which the data are transcribed for summation. Any impingement on the time of the operating personnel or intrusion into their operating records is often subject to resistance.

Reporting, which is not immediately related to providing services to specific clients, is regarded as "paper work" and is carried out with little understanding of the contribution it makes to achieving program objectives. This situation is especially aggravated when the methods used to tap the operating records, the transcription and transmittal of the information, and the summarization of the data are time consuming. Cooperation is even more impeded when time-consuming processes are involved or when there is no feedback of information. To the extent that advanced technology for data collection and summation minimizes interference with operations, it facilitates the introduction and maintenance of a program management information system.

Impact of Manpower Program Developments in the 60's

Recognition of the inadequacies of manpower information, especially of social and economic data about manpower resources, problems, and programs, became evident in the early part of the past decade. The period between 1961 and 1966 was characterized by a torrent of federal legislation related to human resources and manpower. The hearings incident to this legislation, covering the entire spectrum of problems in the field from social services, education-training, and health services to job market services, disclosed serious gaps

in manpower information. Only the most broad and vague program goals and objectives could be established. Although the emergence of a "manpower policy" in the context of a "manpower revolution" reflected an awareness of manpower problems, there was an absence of the appropriate information needed to determine the kinds of manpower services required to deal with them or to gauge the order of their priorities. The lack of these vital manpower data prevented the determination not only of more exact manpower program goals but also of the criteria required to assess performance.

In the crisis atmosphere of hastily enacted legislation, and its preoccupation with raising expectations for the poor, the disadvantaged, and racial minorities in such areas as equal employment opportunity, improved employability development, and increasing literacy skills and occupational qualifications, relatively little attention was directed to program effectiveness and administration. The widening gap between manpower goals set forth in legislation and delivery of manpower services accomplished through actual program performance became increasingly evident in the last half of the decade. While program conflicts, together with overlap and duplication, existed at the federal level and were transferred to the state level of administration, the program limitations were often most manifest in the local areas.

There was neither orderly sequence nor logical rationale in the enactment of manpower legislative measures, and the programs intended to implement the legislation were not systematic in their structure and organization. Indeed, the existence of a wide array of programs appears to deliberately encourage fragmentation of effort within broad bands of manpower services. This is not surprising since

the highest priorities on access to manpower services were assigned to elements in the population and the labor force about which least was known. For these elements there was little program experience or precedent in the delivery of manpower services.

The manpower program procedures, techniques, and methodologies established as a result of the growing awareness were often ill adapted to the requirements of the poor, disadvantaged, and racial minorities; the need for experimentation was clear. However, the organization of information, the introduction of regular, recurring informational inputs, the storage and retrieval of information--in short an information system--while indispensable, is extremely difficult to achieve in an environment dominated by constant experimentation and change.

Serious shortcomings in the delivery of manpower services locally resulted from the number and scope of manpower statutes; the multiplicity of manpower agencies administering programs; the proliferation of financing and spending authorities; the fragmentation of manpower programs; the variety of channels of communication among the federal, state, and local governments in the manpower field; and, finally, the splintering of jurisdiction and authority in local governments. By the end of 1966, public criticism and demands for improved manpower services, together with increased Congressional determination to bring about greater program coordination and consolidation, gave new importance to manpower information to meet manpower program management requirements.

A manpower information system, especially one for program management, cannot be more comprehensive or effective than the manpower administrative authority that creates it. For this reason,

program management information (and therefore the information system) is shaped by the scope and character of program management. To the extent that program coordination or consolidation is achieved, the task of management is made easier. Beginning in 1967 some initial steps were taken to expand manpower program coordination locally. One of these, the Concentrated Employment Program (CEP), had among its objectives the development of centralized local administration of separate manpower programs. This development was introduced in a number of target areas. In Philadelphia it had a special, unique character because the CEP was originally a nonprofit corporation serving as the primary local sponsor of manpower programs. The objective of centralized administration locally was not achieved generally through CEP, because a number of separate manpower programs were carried on locally.

Another manpower program development which gave some impetus to providing for program management information was the Cooperative Area Manpower Planning System (CAMPS). Under Department of Labor leadership early in 1967, a number of other federal agencies such as the Office of Economic Opportunity, Economic Development Administration of the Department of Commerce, Department of Housing and Urban Development, Rehabilitation Services Administration, Bureau of Adult and Vocational Education, and Bureau of Assistance Payments in the Department of Health, Education, and Welfare agreed to cooperate in the preparation of comprehensive coordinated manpower plans for 68 major labor areas.[4] Additional federal agencies later joined CAMPS. The initial effect of the program was the introduction of an inventory of

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[4] Manpower Report of the President, 1968, pp. 196-97.

manpower programs locally. By 1968 an executive order (No. 11422) was issued giving local communities a more active role in CAMPS and in the formulation of manpower programs to meet their needs.

The Social Security Act was amended in 1967, through the authorization of a Work Incentive Program (WIN) in Title IV of the Act. This program became operative in the fall of 1968, and required that local welfare agencies and local offices operating under state employment service contracts engaged in cooperative services to AFDC (Aid to Families of Dependent Children) recipients. An inherent characteristic of this program required the interchange of certain kinds of manpower information. Although this information was essentially of the type needed to improve services to individual clients, it also had potential for utilization in program management when organized and processed to meet this objective.

In the spring of 1968, all state agencies were put on notice by the Manpower Administration that manualized reporting did not "provide adequate or timely information for the administration of employment security programs."[5] A new Employment Security Automated Reporting System (ESARS), with special application to the Employment Service, was developed to be introduced as soon as feasible. In addition to being automated, ESARS brought about the conversion from activity or transaction reports to reports on individuals and the services provided to them. It was to provide data for program planning and administration, and be compatible with a

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[5]U. S. Department of Labor, Bureau of Employment Security, General Administration Letter No. 1198, May 15, 1968.

cost accounting system based on maximum feasible automation of reporting procedures and a high degree of flexibility.

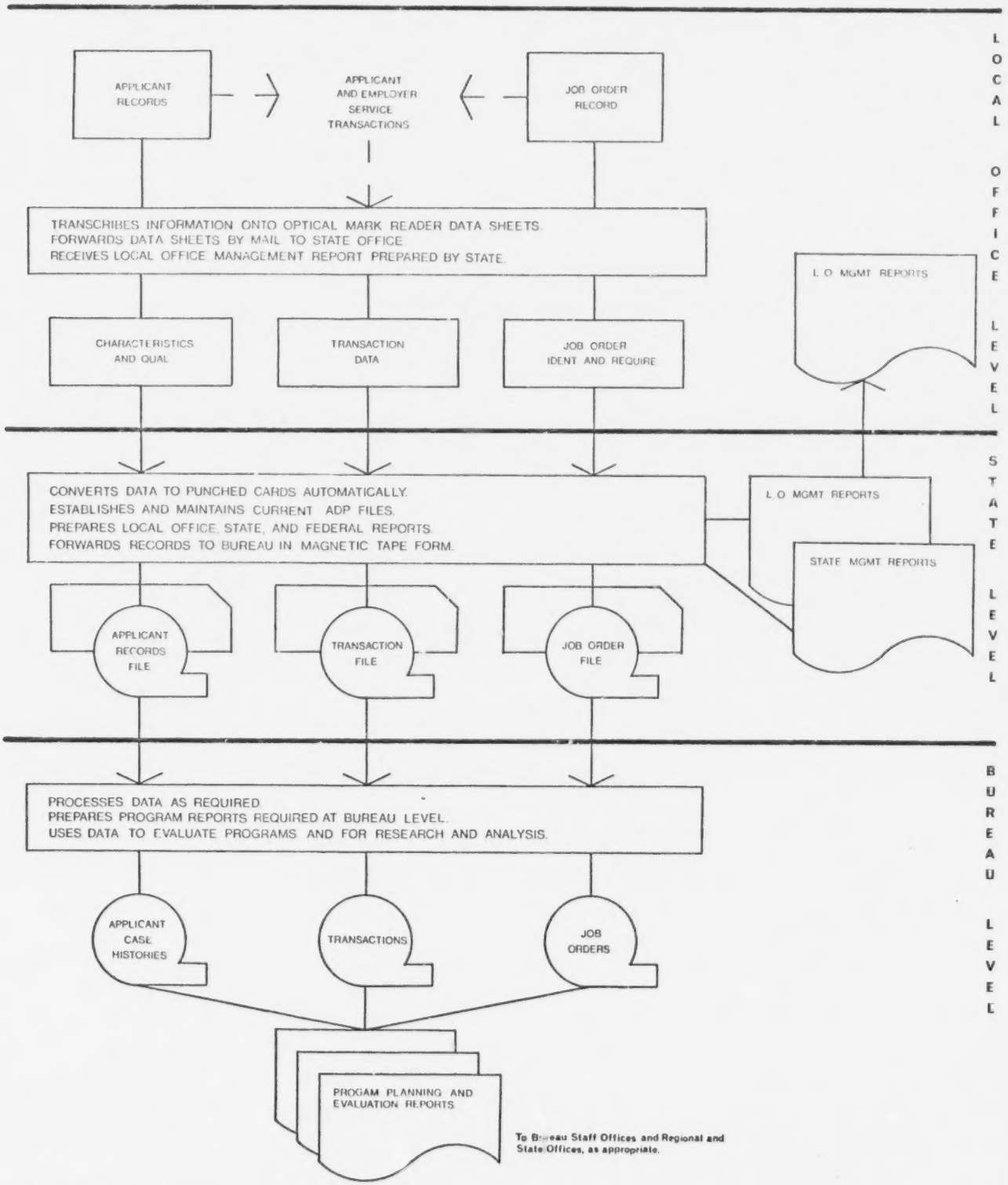
The ESARS concept and data flow (see Figure 1) were chiefly concerned with the program management requirements at the state and bureau (federal) levels. The transcription of information onto optical mark sensor reader data sheets meant that not until the state office prepared and transmitted a management report to the local office would it have the needed management tool. There was no evidence that the aggregation of requisite information from several offices to provide a local area-wide report for the use of an area manpower director was contemplated.

Another development signalling the importance of local area manpower data for program management was the introduction in 1968 of the requirement by the Manpower Administration (MA) that an annual manpower planning report be prepared for each major local area labor market. An introductory model of such a report, prepared by the area MA office in Philadelphia, was issued in June, 1968. The report, intended to examine the "universe of need" (all those in need of manpower services) and thus provide an environmental basis upon which manpower program scope and priorities might be determined, was to be available to all agencies participating in the CAMPS program. Actually, because of limited manpower data, only rough estimates of the universe of need were given in the local area manpower planning report. It proved inadequate as an aid to program management.

At about the same time the Manpower Administration also required that a local office plan of service (LOPS) be prepared as an integral part of program planning and budget administration.

Figure 1. ESARS CONCEPT AND DATA FLOW

Employment Service and Manpower Program Information


APPLICANT RECORDS
APPLICANT AND EMPLOYER SERVICE TRANSACTIONS
JOB ORDER RECORD
TRANSCRIBES INFORMATION ONTO OPTICAL MARK READER DATA SHEETS.
FORWARDS DATA SHEETS BY MAIL TO STATE OFFICE.
RECEIVES LOCAL OFFICE MANAGEMENT REPORT PREPARED BY STATE.
L O MGMT REPORTS
CHARACTERISTICS AND QUAL
TRANSACTION DATA
JOB ORDER IDENT AND REQUIRE
LOCAL OFFICE LEVEL
CONVERTS DATA TO PUNCHED CARDS AUTOMATICALLY.
ESTABLISHES AND MAINTAINS CURRENT ADP FILES.
PREPARES LOCAL OFFICE, STATE, AND FEDERAL REPORTS.
FORWARDS RECORDS TO BUREAU IN MAGNETIC TAPE FORM.
L O MGMT REPORTS
STATE MGMT REPORTS
APPLICANT RECORDS FILE
TRANSACTION FILE
JOB ORDER FILE
STATE LEVEL
PROCESSES DATA AS REQUIRED.
PREPARES PROGRAM REPORTS REQUIRED AT BUREAU LEVEL.
USES DATA TO EVALUATE PROGRAMS AND FOR RESEARCH AND ANALYSIS.
APPLICANT CASE HISTORIES
TRANSACTIONS
JOB ORDERS
PROGAM PLANNING AND EVALUATION REPORTS
To Bureau Staff Offices and Regional and State Offices, as appropriate.
BUREAU LEVEL

Source: Manpower Administration, Department of Labor

This too gave new importance to the interchange of manpower information among local agencies and the use of such information locally for program management. In order to prepare the LOPS, the local training and employment service office was compelled to seek information from many other local human resources and manpower agencies whose activities and services greatly influenced its own program. Although such information was often inadequate, or simply not available, its potential for program management received increasing recognition.

"New Federalism" and Manpower Program Management

President Nixon, in a public message delivered on August 8, 1969, set forth the domestic program of his administration which came to be known as "New Federalism." The essence of this program concerned welfare system reform, revenue sharing, and restructuring of agencies engaged in the manpower field, together with legislation designed to achieve more effective manpower administration. With regard to manpower program management, its key feature was to place maximum reliance on local institutions for planning the utilization of resources derived from federal taxes and for the actual administration of programs.[6]

The aim of New Federalism is to shift responsibility for manpower administration away from Washington to the states and local areas. It also seeks to assign increased leadership responsibility to elected state and local officials. Thus the significance of the

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[6]Arnold R. Weber, "Manpower Administration and the New Federalism," Manpower, vol. 1, no. 2 (December, 1969), pp. 20-22.

local area as the critical arena in which manpower services must not only be delivered but also supervised and managed was stressed. The implementation of revenue sharing and decentralized program administration through new federal legislation has as yet made only slow progress. Nevertheless, administrative steps are being taken in a number of federal-state programs to decentralize activities.

The emphasis on decentralization of manpower operating responsibilities becomes important when considered together with the pressures for more effective program administration through greater coordination of agency activities. These forces applied to manpower services gave increased impetus to program management and, subsequently, to a re-examination of organizational structures, lines of communication, methods of supervision, and staff improvement activities. The shift in focus under New Federalism from policy goals and objectives to program performance--delivery of services--introduces, of course, a basic component of program management and supervision.

Many management services in public administration have benefited in recent years from the high priority assigned to program management. This has been true of staff training and development activities, technical services and assistance, modernization of communication facilities, and the introduction of electronic data systems and computerization processes. Information systems for program management, however, have not yet advanced to the same degree. This is especially true of a manpower information system specifically geared to program management requirements. It may well be that the problems inherent in such a system, in addition to those shared with many other programs, are also intensified because of the

highly personalized, delicate, and controversial issues found in the area of human resources and manpower.

Recently Proposed Federal Manpower Legislation

A number of legislative proposals designed to redefine manpower services and to strengthen and restructure manpower organizations to provide services through various combinations of authority in the federal and state governments were introduced in Congress during the Johnson administration. None of these proposals was approved by both houses during that administration; many failed to reach even a hearing stage.

The growing recognition of the importance of labor market information to facilitate the achievement of manpower program objectives is evident in the 1968 amendments to the Manpower Development and Training Act of 1962 (Pub. Law 90-636). Section 106, "Labor Market Information and Job Matching Program," called for the development of a comprehensive system of labor market information on national, state, and local bases "on the number and characteristics of all persons requiring manpower services"; job opportunities and skill requirements; labor supply in various skills; and occupational outlook and employment trends. It stated that such information should be used to carry out "recruitment" and related activities provided for in numerous federal statutes affecting the activities of the Departments of Labor, Health, Education, and Welfare, Commerce, and Housing and Urban Development.

Following President Nixon's message on New Federalism the U.S. Secretary of Labor, on August 12, 1969, transmitted to Congress

a draft of the Manpower Training Act of 1969. Its major feature was the creation of a comprehensive manpower services system. In support of such a system the proposal included such important program management elements as preparation of annual state plans of service and evaluation of performance of state and area manpower service systems. The proposal provided that while the governors would be responsible for state comprehensive manpower plans and the utilization of manpower programs resources, the responsibility for planning and implementing manpower programs in urban areas would rest with the mayors (frequently referred to as "prime sponsors"). These provisions--together with those providing for flexible funding and progressive decentralization of administration to local areas, based upon administrative capacity in each area--made program management critically important. In addition, the designation of a prime sponsor of manpower program services locally; the creation of local area manpower planning and advisory bodies; and the emphasis on evaluation of program performance were designed to emphasize the role of program management.

It is noteworthy that the Manpower Training Act of 1969 (Administration Bill--H.R. 13472 and S. 2838) provided (Title III) that in support of the decentralized manpower service operations certain special federal programs in the fields of information, research, and development; in labor market information; in manpower utilization; and in training and technical assistance should be undertaken by the Secretary of Labor. The bill further provided (Title IV) that the Secretary of Labor should establish a national computerized job bank program, taking account of developments of electronic data processing and telecommunications systems. While

this computerized system was intended primarily to match job seeker qualifications with employer requirements and job opportunity specifications, it was recognized that the advanced technology could expand information availability and that it should be coordinated with administration of the comprehensive manpower program.

Although the 1969 manpower legislative proposals were not enacted, many of them were incorporated in the proposed Employment and Manpower Act of 1970. The House of Representatives passed a bill which conformed to many of the features favored by the Nixon administration. The Senate, however, adopted a measure which provided for jobs in the public sector and for specific categories of special manpower programs which the administration opposed. The bill agreed on in conference and passed by both houses was sent to the President, but because it contained many of the provisions which the Senate had adopted in its earlier bill, it was vetoed. In his veto message, President Nixon reaffirmed that he favored a manpower bill which (1) would make it possible for state and local governments to develop comprehensive manpower programs, closely adjusted to local community and individual worker needs, and (2) would afford state and local governments a responsible role in the planning and administration of manpower programs. These elements have major significance for manpower program management. Even more important, they require for their implementation a system of manpower information designed to assist in the carrying out of management responsibilities.

In the field of human resources and manpower legislation three major thrusts continue to be the center of political and public interest. These are (1) manpower programs and organization structures

to support them, (2) family assistance programs, and (3) revenue sharing. Each involves some reallocation of program and management responsibilities which in turn will have implications for requisite manpower information. However the issues may be resolved, the predominate role of the local area in the delivery of manpower services is being widely recognized. At the same time there is a growing awareness that the tools and instruments needed to support this role--especially in program performance and its management--are sadly lacking. Among the most necessary tools is an information system which will at least permit some local area-coordinated manpower program management undertaking. It is not likely that a unified, consolidated local agency responsible for delivery of comprehensive manpower services will easily or quickly come into being. The management problems which are magnified by program fragmentation and divisions of authority may in some degree be reduced through a meaningful manpower information system.

In the sections of the report which follow some effort is directed to an examination of the various considerations which are influential in determining the nature of an adequate and feasible manpower information system for program management. No doubt many of the constraints which have heretofore barred the emergence of such a system are beginning to lose their powers in the face of ever mounting demands that manpower program management assure more effective delivery of manpower services locally. Yet one cannot be sanguine about the changes which are taking place since the pressures for a manpower program management information system must overcome obstacles which for many years have denied the creation of such a system.

CHAPTER II

ORIGINS AND USES OF MANPOWER DATA

Manpower Data and Program Services

The organization and systemization of data depend on the uses to which the data will be put. For example, the central objective of manpower programs is to improve the economic capability of a population for effective and meaningful participation in the economic life of society with resulting job satisfaction and rewards. Manpower policy seeks to achieve the optimum development of human resources and the maximum utilization of manpower resources at their highest skills. In this country manpower policy needs to be considered in the context of the Employment Act of 1946, which declares the national policy goals to be "maximum employment, production and purchasing power." Manpower services provided through programs designed to advance manpower policies should be judged by how they contribute to maximum employment, increasing income, and continuity of income.

Fundamental to an understanding of the economic capability of a population is an analysis of its demographic characteristics such as age, education, labor force status, occupation, and income as well as of its geographic distribution. Attitudes toward work and work satisfaction have an important bearing on labor force status and economic participation and are affected by a host of variables, including work experience, rewards and success, failure and

discrimination, commitment to a particular life style, and employment opportunities both real and perceived.[7]

The development of job market and employment services from limited labor exchange functions to comprehensive manpower services consistent with a manpower agency whose objectives are the optimum development and utilization of manpower potential has only recently begun.[8] Another recent development is the use of supportive and rehabilitative services to improve employability and its extension to the disadvantaged as high priority claimants.

Delineation of the full scope of activities which should be encompassed within "manpower services" is not an easy task. "Manpower" can be defined as the interaction between the two basic goals of government manpower policy: "(1) to promote the full development of our human resources by assisting individuals--particularly the poor and the disadvantaged--in their adaptation to the world of work and in the fulfillment of their employment potential, and (2) to contribute to national economic stability and growth."[9] Thus, the array of comprehensive manpower services includes "the usual employment services

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[7]For a discussion of factors affecting employment of the disadvantaged, see pp. 91-109 of the Manpower Report to the President Including a Report on Manpower Requirements, Utilization and Training by the United States Department of Labor. Transmitted to Congress, April, 1971.

[8]Louis Levine, The Public Employment Service: Transition from Labor Exchange to Comprehensive Manpower Services Agency (University Park, Pa.: Institute for Research on Human Resources, The Pennsylvania State University, n.d.), p. 24.

[9]Stanely H. Ruttenberg assisted by Jocelyn Gutchess, Manpower Challenge of the 1970's: Institutions and Social Change (Baltimore: The Johns Hopkins Press, 1970), p. 1.

(help to individuals in finding jobs), services aimed at rehabilitation or preparation for employment, manpower training, work experience leading to employment, and subsidized employment in the public sector."[10]

The need for drawing on a broad range of human resource activities, including health, social, and cultural services, for the implementation of employment becomes essential to a comprehensive manpower program "so that the individual may develop all his latent talents and potentials for contributing to his own advancement and to the society of which he is a part."[11] The public employment service assistance to clientele is interwoven with that of other institutions and agencies in the local community and the labor market.

An indication of the extent to which comprehensive manpower services currently exist is found in Appendix A of the 1970 Manpower Report of the President, where 24 federally assisted manpower training and support programs are described. They encompass a wide range of services, including child care, supportive health services, paid work experiences, improvement of the environment, and general welfare of residents of designated poverty areas. The more traditional training and placement services are also covered.

The keen interest evident in the extension of manpower programs and services is underscored by recently enacted legislation providing for public service employment broader in scope than the Neighborhood Youth Corps, the Public Service Career Program, and New Careers. Active legislative consideration is being given to

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[10] Ibid., p. 99.

[11] Levine, op. cit.

considerably expanding employability improvement programs for welfare clientele and the working poor. There is also interest in programs to promote labor mobility and to provide worker relocation assistance.

Direct and related manpower services programs can be divided into four categories:

1. Primary services include the traditional services most immediately and directly related to participation in the work force and labor market. They include employment counseling, job placement, vocational education and training, as well as employer services and the dissemination of labor market information.

2. Supportive and rehabilitative services include adult basic and remedial education and health, social, and legal services to improve employability.

3. Income maintenance and financial assistance related to employable persons include work support programs, relocation assistance, and unemployment compensation. Some of the payments in this category are closely related to social insurance payments and have important implications in connection with proposed family assistance legislation.

4. Indirect services affecting manpower development and employability include housing, public utilities, transportation, and essential public services--all of which are important to the location of both workers and work places. They also include programs designed to extend or improve public services or to improve those aspects of the environment related to developing and better utilizing manpower.

Combinations of services and payments found in programs of intensive employability development activities such as the Concentrated Employment and Work Incentive Programs (CEP, WIN), are also characterized by the way in which highly individualized services and assistance are delivered--a team approach, with outreach and follow-through for clients.

The foregoing generalizations about manpower policies, programs, and services are intended to provide some background against which both the origins of manpower data and their uses may be understood. Manpower data, broadly conceived, include facts about the delivery and management of manpower services. Data required for program management are not limited to those which are administratively derived; they are, of course, directly concerned with the characteristics and activities of the economically active portion of society. In addition, they must also permit an analysis of that part of the population which has potential for engaging in the economic life of society. Both data relating to human resources which may have potential for the labor market and those facts relating to the socio-economic environment which affect the behavior of persons in the labor force are important to manpower program management.

Much of the data needed to describe manpower problems adequately, understand program performance, and determine manpower policy, however, are shaped by government decisions regarding what data shall be collected and reported through local, state, and federal statistical systems closely linked with manpower programs. In addition, the operation of economic enterprises and the administration of government programs related to manpower give rise to data which are used for management

or are by-products of operations, but do not become part of a formal data collection.

"Environmental" Manpower Data and Program Management

In contrast with data derived from or closely related to specific manpower activities and objectives, there are broader types of socioeconomic environmental data which provide a framework for an analysis of individuals' participation in economic activities and the extent to which manpower policy and programs assist them in satisfying their economic needs. The environment in which manpower programs function comprises the structure of ownership and organization of resources, entrepreneurial skills, intermediate and consumer markets for goods and services, labor force markets, and psychological, socio-economic expectations. These forces and elements dictate the volume and kinds of manpower services needed. In addition, housing and community services--including education and transportation facilities--impact on the effective functioning of manpower programs.

The changing geographic pattern of residential housing and employment also affects manpower programs. Business decentralization within metropolitan areas, migration of whites from central cities to suburbs, and barriers to nonwhite migration to suburbs have produced serious manpower problems for the increasing nonwhite population of our larger cities.

The full scope of manpower data covers a wide range of facts about the economic structure of society, the population, economic establishments, residential locations, transportation, community services, economic markets, technology, consumer wants, and public and private

services designed to enhance the optimum development and utilization of manpower. Of the myriad facts originating in the performance of social systems, some are never used. Many are utilized for limited and isolated purposes; some are organized for formal use to manage a part of the system or as a part of a formal reporting system for other than management purposes.

Special problems in the use of data from censuses and surveys for manpower analysis, and particularly in urban poverty areas, were examined by Levine and Norton.[12] These problems include obsolesence of data, response and sampling error, and undercount.

In addition to the quinquennial economic censuses and the decennial censuses of population and housing conducted by the Bureau of the Census, the Bureau of Labor Statistics (BLS) in the Department of Labor is involved in the following surveys and programs for which metropolitan or related data are available:

1. Employment and Labor Force based on the Current Population Survey. Annual information on employment status and unemployment are published for the 20 largest SMSA's and 14 of their central cities.

2. Employment, Hours, and Earnings. A monthly report conducted by the BLS in cooperation with the Manpower Administration and cooperating state agencies. Statistics are available for 210 areas. Local unemployment estimates are prepared by the state employment security agencies in accordance with instructions from the U. S. Training and Employment Service.

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[12] Levine and Norton, op. cit., Part I, pp. 72-82.

3. Labor Turnover and Job Vacancies Data. Similar to the employment program described above. Monthly rates of personnel actions--total accessions and new hires, separations and quits for manufacturing and mining industries--are compiled for 91 areas. Job vacancy statistics were added in January, 1969.

4. The Urban Employment Survey. Developed specifically to measure and examine barriers to employment and attitudes toward work in CEP areas of six cities. The survey was conducted for the second and last time in 1970.[13]

5. The Occupation Outlook Service. As a part of this program the BLS assists local organizations in making projections of manpower information needed in planning for educational and other facilities.

6. Projections of Population and Labor Force. Includes separation rates for individual occupations.

7. Employment by Occupation and the Occupational Composition of Industries. A comprehensive program recently launched by the Bureau of Labor Statistics in cooperation with the Manpower Administration and the state employment security agencies.

8. Area Wage Surveys. Detail earnings by occupation based on annual surveys in 85 metropolitan areas. These surveys, conducted by personal visits to a sample of approximately 14,000 establishments, permit a wide range of studies of metropolitan area wage structure, interarea relationships, and occupational and skill relationships. In 1965, following the enactment of the Service

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[13] Manpower Report to the President, op. cit., pp. 181-82.

Contracts Act, which specifies the payment of prevailing local rates to employees of firms with contracts to perform services for the government, the coverage of area wage surveys was extended to 78 additional localities.

9. Industry Wage Surveys based on mail questionnaire surveys in 68 cities. Data on negotiated union wage scales, standard hours of work, and supplementary benefits in selected industries are collected annually; occupational wage data for other industries are gathered at three- to five-year intervals. Data are used for wage and salary administration, collective bargaining negotiations, conciliation and arbitration, and occupational counseling, and in administrative evaluation of job offers to unemployment insurance beneficiaries.

Data from these censuses and surveys are used as background information and are benchmark material for the preparation of area labor market reports and such planning documents as the annual manpower planning report and the comprehensive manpower plan prepared as a part of the Cooperative Area Manpower Planning System (CAMPS).

District offices receive monthly printouts of data on employment hours and earnings for individual employers in the joint BLS and state employment security agency survey. In addition, local offices conduct monthly sample surveys of labor turnover and anticipated employment which are used for counseling and for labor market information.

The Organization of Administratively Derived Data

When data are quantitative and the initiative for collection is defined as "general purpose" the information is considered to constitute "statistics." The same data used for budgeting, program reporting, or some other specific managerial activity would be considered administrative or management information. Although there is no clear-cut distinction between statistics and management information, statistical information tends to be processed and collected wholly or in part by organizational components other than management units. Such information serves particular uses beyond those specifically within the scope of program management. Among these are legislative needs, policy determination, and research into broad social and economic objectives. The statistical collection of data originating in administrative records is usually based on legal reporting requirements; there are penalties for failure to comply and strict conditions controlling the confidentiality of the information.

An important distinction in statistical programs is made between direct enumeration and interrogation to obtain information about workers' households (such as the Census of Population of the Bureau of Census and the monthly labor force survey of the Bureau of Labor Statistics) and an establishment approach based on reports from employers (such as is used for the industry surveys of the Bureau of Labor Statistics).

Data elements in such statistical programs are frequently defined with reference to source documents in the possession of the individual or establishment such as birth certificates or records

of tax payments. Statistics derived entirely from operational records of a government agency and not as a result of a direct enumeration or establishment report are referred to as administratively derived or operations by-product data. An important source of statistical information, they also provide basic data needed to manage the activities of government and private organizations.

Although the original information in the operating record may often be traced to a legal requirement, the organization of administratively derived data for management use is generally not based on statutory provisions. Recent manpower legislative proposals, however, recognizing the importance of data and the systematization of implementation, have specified data elements, both statistical and administratively derived, which must be used in reporting to meet stated manpower program objectives.[14] Such legislative requirements, like statistical reporting requirements, historically have originated at the federal level of government and have been influenced by the national need for data for policy decisions and legislative formulation. Local area aggregation has been less common and is generally influenced by political considerations or community public interest. Statistical systems are also characterized by a concern for quality control in collecting and editing--and in technical details of processing and organizing--the data.

The utilization of administratively derived data for management, on the other hand, is based on specific managerial uses--e.g.,

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[14]For example, see Title I of the proposed Manpower Revenue Sharing Act of 1971 in the 1971 Manpower Report to the President, op. cit., p. 189.

to support budget requests, to guide the delivery of services, or to account for monies spent. The geographic units of aggregation are generally those areas which correlate with the organization of staff and the delivery of services. Confidentiality, while not a legal requirement, is frequently an important policy consideration. Unlike the case with statistical programs, public release of the information does not always follow.

Administratively derived manpower program data for a specific agency originate from four major sources:

1. Applicants. The application for services or payments or the provision of these to persons by manpower and manpower related agencies give rise to extensive data on the characteristics and changing statuses of individuals. Data are also frequently collected for their families.

2. Employers. In addition to statistical survey forms and taxation and regulatory reports (which often are employed for both administrative use and as a part of a statistical system), employers also provide data to local employer relations representatives. Such information is supplied as a part of the job order process.

3. Manpower Services and Payments. Files for individual participants and employers contain information on payments and services provided. The regular reporting of these services and payments is an important part of the management of manpower services. Individual employees of manpower programs are also required to account for the time they spend providing services.

4. Internal Administrative Activities. Personnel management, housekeeping, and budget processes incidental to the internal

administrative activities of an agency yield numerous records reflecting allocation and utilization of staff resources. These data include the number of manpower personnel by office and agency and their salaries, the location and cost of office and other space and equipment, and monies budgeted and spent.

The organization of administrative data, which are used at numerous levels of management, will differ according to the administrative and management responsibilities assigned to particular levels. At the local area operating level, data are collected chiefly for the delivery of services directly to the clientele and are used to check on eligibility requirements and whether sound diagnosis of individual manpower problems is taking place and appropriate manpower services being provided to individual clients. The information is organized to assist in the supervision and management of accounting and assessment. Data needs at this level focus on the individual file record.

At the activity or program element level, agency activities related directly to the production of a discrete agency service or group of related services are aggregated to reveal how agency manpower resources have been utilized. This type of aggregation is of particular interest at the state and federal levels for budget administration of manpower agencies. Shifts in budget determination to the local area may enhance the usefulness of activity level data at the local level.

Aggregation at the local or even state level may be incidental to the federal need to account for program activity for budget planning and for legislative needs. Certain evaluation needs such as cost-benefit and cost-effectiveness studies require that the data be

supplied for individual manpower participants and not merely summarized. Unfortunately, a lack of adequate quality control of information recorded at the local level severely limits the use of such data at the national level.

As additional manpower programs have been put into operation, new formats for basic operating records (such as the MA 101 and the Job Bank statistical forms) and new systems for compiling summary program management data (e.g., the Employment Security Automated Reporting System [ESARS]) have been put into effect. Although automated data processing (ADP) has somewhat eased the burden of recording and processing data, the growing number of separate and largely uncoordinated demands from a variety of government agencies at district, regional, state, and federal levels have created what one manpower analyst has referred to as a "paper blizzard."

The Hierarchy of Data Use within the Administering Agency

Basic to all program managerial functions within the manpower agency is a knowledge of the clientele served, both individuals and employers, the amounts and kinds of services provided, and the resources used and available. Most information of this type is found in the records of the agencies engaged in delivery of manpower services. Examples of the kinds of forms used and the types of data recorded can be found in Part II of Manpower Information for Urban Poverty Areas.[15] Four types of data on manpower programs were noted

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[15]Levine and Norton, op. cit., Part II, "An Inventory and Appraisal of Local Data Resources in Philadelphia."

earlier in the chapter: individual participant, employer, manpower services and payments, and internal administrative activities.

Most records for individual participants contain sections for recording characteristics of the individuals, their status in manpower or manpower related programs, and the services diagnosed or provided. Summaries of characteristics data help to define not only the clientele groups but also the problems in program administration which require changing priorities and program composition. In the case of agencies with program interface such as public assistance and employment service agencies, the number and characteristics of persons in certain public assistance programs define, at any one time, the upper limit of persons who may be referred by the public assistance agency to the Employment Service (ES) WIN office.

Counts of clients served classified by key characteristics such as "disadvantaged" or "veteran" and by type of service received become measures of program accountability and the basis for projecting future operations.

Because of the difficulty of distinguishing measures of activities or services performed from the number of individuals served, the new ESARS system is designed to summate data on multiple services for the same individual. ESARS also enables the coordination of data from the Job Bank reporting system with those from other ES operations.

Another source of information on services provided by ES staff is the monthly time distribution report which sums daily time by cost center and by project and function activity codes.

Data for employers, from other than survey sources, are illustrated by the UC-2 form (Employer's Report for Unemployment

Compensation), which includes the name, Social Security number, and gross quarterly wages of each employee, and the employer record and field contact reports which are filled out by ES employer relations representatives. The first form is used exclusively for administering the unemployment insurance law at the state level and for statistical purposes as a check in estimating employment at the state and local levels.

The employer record and field contact reports include information about the internal operations of the employer's manpower operations, ES office activities such as referrals and placements, and major services rendered by the local office together with recommendations for future service.

Data derived from internal administrative activities originate with the personnel and "housekeeping" functions in the local office. These are used in day-to-day management and supervision. In the preparation of a local plan of service such information takes on a broader management application.

In order to analyze the primary data collection activities and responsibilities in the manpower services and related agencies in a local area, operations of the manpower activities in the Philadelphia SMSA were selected for study. The summary descriptions and observations presented below on the collection and uses of manpower information locally and at other levels of government responsibility are based on interviews undertaken by the project staff during the past two years and on an analysis of reporting forms and published reports. Because a complete description of all data flows and uses is beyond the scope of this study, not all data sources or uses are

included in the summaries. Descriptions of information flows for ESARS and for the WIN and CEP programs are included in Appendix B.

Local Office Records for Manpower and Related Services

Not all of the agencies in the Philadelphia area which deliver manpower services are described in this report because of the limitations of time and scope of the project. Private agencies which have a subcontractual relationship with the Department of Labor have, in particular, been omitted; in general they do not account for a major part of the manpower services provided locally. Moreover, because of the lack of continuity in private agency involvement, reporting to the subcontracting government agency is appropriate.

Emphasis has been given to agencies which provide primary services and financial assistance, specifically the local ES offices, the WIN and CEP offices, and the Philadelphia County Public Assistance Office. Two of the operations, the Philadelphia offices of the Department of Community Affairs and the Bureau of Vocational Rehabilitation, were selected as examples of more specialized programs.

The Model Cities Program has funded small manpower demonstration programs and has proposed an outreach program in the North Philadelphia poverty areas.

The Philadelphia school district has four vocational high schools and a skill center for persons out of school which is run in close conjunction with the Philadelphia ES operations.

The Philadelphia Department of Health has no connection at present with supportive manpower services but does compile certain

types of environmental data for Philadelphia, as does the City Planning Commission.

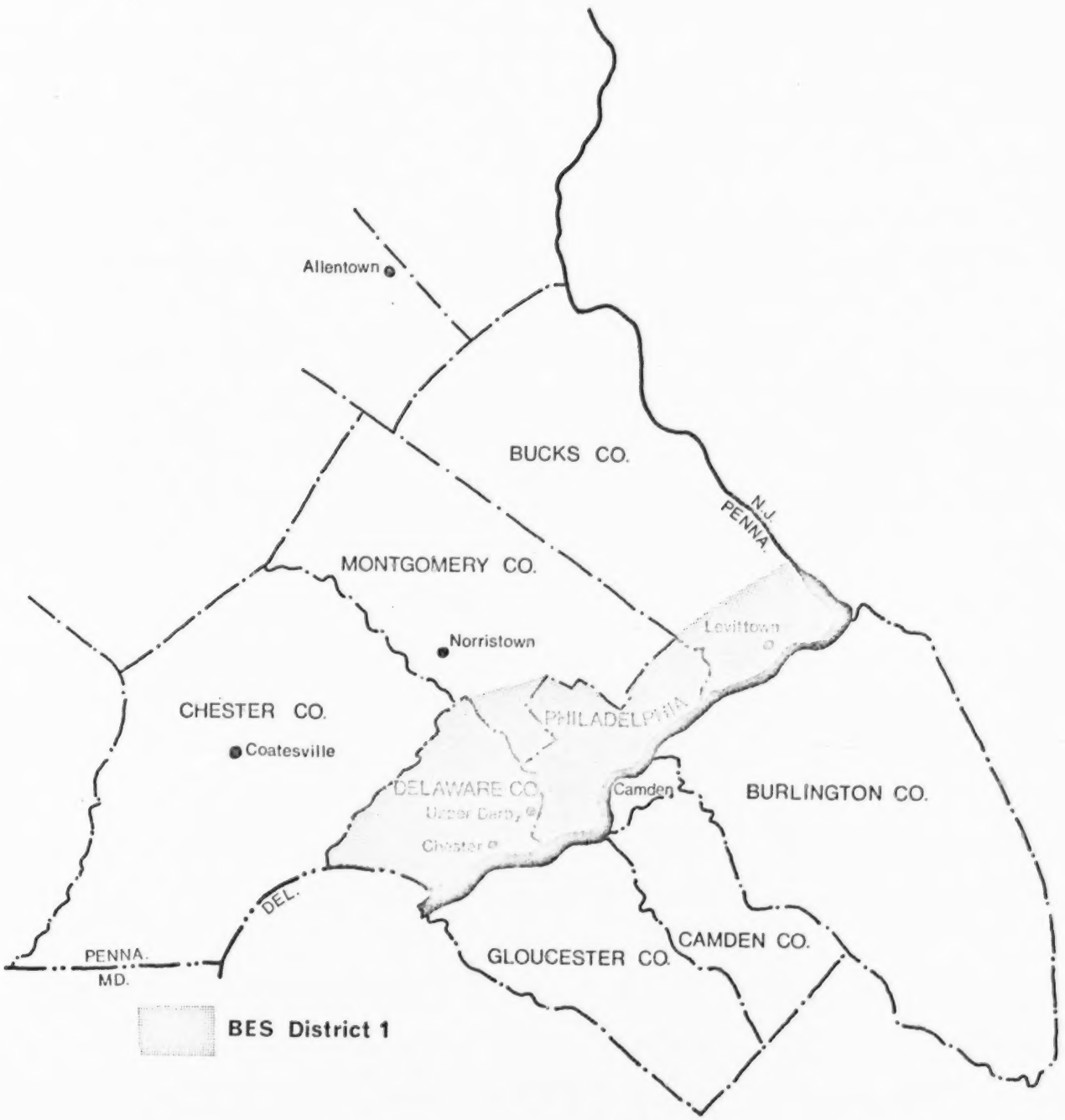
The mayor's office has a small manpower staff provided through CAMPS funds. In addition to providing the chairman of the executive committee of CAMPS, the mayor's office took over the operation of CEP in early summer of 1971.

Employment Service Local Offices: There are nine local offices in the city of Philadelphia and four outside the city but within the boundaries of District 1 (see Figure 2). Boundaries of the city office area are described by streets, creeks, rivers, and the city perimeter.

The main activities of the local offices are recording and processing claims for unemployment compensation, recording and processing applications for employment, counseling and directing job applicants in their job searches as well as diagnosing their needs, and referring non-job ready applicants to training programs and remedial services. The district office allocates personnel to local offices on the basis of such work measures as number of claims and applicants.

Conversion to the ESAR system added considerably to the work of the local offices during 1970. Transition activity report forms and hand-tabulated summaries were required through April, 1971, and the full managerial use of ESARS was not immediately evident to the local office managers. However, the old system of applicant card files was difficult to update and summarize. Once ESARS was implemented, it was anticipated that the new system would provide valuable

Figure 2. PHILADELPHIA SMSA AND PENNSYLVANIA BES ADMINISTRATIVE DISTRICT 1



information on the characteristics of applicants who had and had not found jobs and that it would also supply activities data.

Preparation of the annual plan of service was an involved operation. The needs and demands of the community were described by the local managers but from data supplied by the district office. Managerial reporting was done to both the district office and Harrisburg.

WIN Office: Because of the county organization of public assistance in Pennsylvania and because not all counties are eligible to participate in WIN, the Philadelphia WIN office also served as headquarters for the program's operations in Bucks and Delaware counties.

WIN participants are referred to the program from the county public assistance offices. Very little information about the clients is sent to WIN; results of medical examinations having a bearing upon employability would be particularly valuable. A central records unit files individual records alphabetically and by team. Several forms are used to record client information, including form 511 (Employment Security registration card) and forms MA 5-5 and MA 113 (applicant and status change forms). Almost all of the statistics which are sent to the district ES office, Harrisburg, and Washington are generated from the last two forms.

One problem with regard to data is how to determine the characteristics and magnitudes of problems and how to identify needs and priorities based on Washington and Harrisburg oriented statistics. A second problem is the duplication of reporting by the Bureau of Employment Security (BES) and the Department of Public Welfare. For

example, participants in General Education Development programs appearing on Welfare records may also be reported in Human Resources Development program statistics prepared by BES.

One of the data needs not presently met is information on migratory characteristics. Changes in migration trends are important in projecting future manpower services needs. Migration status is also important because of its relationship to public assistance.

The age distribution of public assistance recipients is important because of possible changes in the criteria for employability. Because of the relative homogeneity of the sampled population, a small sample of eligible AFDC recipients can yield needed age and migratory characteristics. The WIN offices prepare weekly management reports which summarize

1. number of current participants.
2. number of referrals.
3. number of referrals who have contacted WIN.
4. number enrolled, scheduled for interview, and not eligible for the program.
5. number pending.

The manager of the Philadelphia WIN office uses informal reporting by his counselors to determine where clients have been sent during the preceding ten days and how many have succeeded in finding employment. In preparing the plan of service, emphasis is given to what should be accomplished and to resource and administrative capacity; an addendum permits a description of what would be done with more resources.

The Concentrated Employment Program: Both WIN and CEP are prototypes in many respects of manpower services operations which may be more extensively required by new manpower legislation. Family assistance plan programs would probably require more extensive work incentive programs. Innovative aspects of the CEP have included the team concept in fostering employability, outreach activities, attempts to make consolidated use of locally available manpower services, and the development of new techniques of management reporting and decision-making.

The Philadelphia CEP office has been faced with a number of serious problems in developing information for program management: instructions for planning have not been provided far enough in advance of planning deadlines; uncertainties about budgets and lack of experience in program operations have necessitated modifications in plans; the large numbers of subprograms and subcontractors have added to the complexity of reporting operations; monitoring the delivery of services of subcontractors and obtaining invoices from them for monthly financial reports and projections have both been difficult.

Providing information to monitor the activities of enrollees has been still another problem. The definitions of performance standards have sometimes been vague and unrealistic and the value of enrollees being asked to evaluate their progress has been questioned.

Along with citing difficulties in developing jobs, many persons interviewed by the project staff complained about insufficient job market information.

In recognition of the problem of inadequate management information and a need to report and evaluate its program, the Philadelphia

Employment Development Corporation (forerunner agency to CEP) employed in 1970 a firm of management and government consultants to design a management information system and to train staff for its use. A circular management process, based on an operating plan, incorporated performance objectives and standards, monitoring, and evaluation.

In addition to using information to measure success in reaching goals and detecting problems at the component operating level, the proposed management information system for CEP was to attempt to provide basic enrollee flow data. For management control, a system of "warning lights" was planned to alert the director to the need for corrective actions needed in program management.

Monthly levels of service and dropouts are projected for each type of activity: recruitment, intake, direct placement, orientation, intensive evaluation, skill training, job experience, work experience, job entry, and job placement. Detailed qualitative and quantitative performance standards are used.

The Philadelphia County Board of Assistance: The Philadelphia County Board of Assistance office (CBA) is an agency in which only a small part of the activities are devoted to providing manpower services, primarily in connection with the WIN program, of the supportive and financial assistance types. Administratively, the Philadelphia CBA is organized into nine districts (see Figure 3).

Two monthly reports are prepared summarizing data for each of the district offices. The first, "Summary Report of Caseload and Staff by District," presents the active caseload at the end of the month by eight assistance categories, net number of applications received during the month, applications pending at the end of the

Figure 3. PHILADELPHIA COUNTY BOARD OF ASSISTANCE DISTRICT BOUNDARIES JULY, 1970

month, number of staff (caseload workers, applicant workers, clerks, social service professionals, and supervisors), average number of active cases per caseload worker, and workload indexes for caseload workers and case workers. These data are used for administrative purposes only and are not released to the public.

A summary statistical report is distributed to newspapers, the City Council, the United Fund, etc. Expenditure data based on computer summaries of checks issued are presented for six categories of assistance grants together with statistics on average grant per case and per person. Data on cases, persons, and applications by type of aid and details of medical assistance vendor payments and the food stamp and WIN programs are included, as is the number of staff at the end of the month. The two statistics for WIN are persons referred to BES during the month and number of participants in the program.

The district boundaries do not correspond to census tracts or to any other agency administrative areas. For planning and evaluation, the Research and Statistics Section of the Philadelphia CBA tabulates the five major categories of assistance by census tract; the data are charted geographically. These data are also used by Model Cities and the City Planning Agency.

Monthly reports to Harrisburg follow federal reporting requirements and state specifications. Because of delays in obtaining feedback data from Harrisburg, running records of key indicator data are kept.

When a special case record survey is initiated by the Department of Health, Education, and Welfare, selected information is recorded

at the same time on manual tabulation cards. For example, a 16-page case record survey on adult recipients (form SRS-NCSS-106) for a sample of four types of recipients was in progress in the summer of 1970 at the time of our first interview. The project staff was told that, because of the expected delays in tabulations and releasing these data and the understanding that they would not be separately tabulated for Philadelphia, data for the 900 sample schedules were transcribed on a tabulation card and would subsequently be hand tabulated.

Vocational Rehabilitation: The Bureau of Vocational Rehabilitation (BVR), with two local offices in Philadelphia, is an example of an agency which provides supportive and financial assistance as a part of manpower services designed to improve employability and to assist persons in obtaining employment. Program proposals originate in Washington but community need is used as a criterion for adopting proposals. A local "fees and facilities commission" reviews proposals. Relationships with BES, the Department of Public Welfare, and WIN are through formal agreement.

Monthly reports on the characteristics of program clientele are prepared in Harrisburg. Although some estimates of target populations prepared by Model Cities are used by BVR, more emphasis is placed upon outreach programs through city and private organizations and through linkage with community groups.

The vocational rehabilitation program in 1970 included alcoholics but not persons with drug problems. Extension of coverage to persons who are socially or culturally deprived was felt to be imminent.

Model Cities Program: As in the case of the BVR, the manpower programs in Model Cities make use of the Job Bank. Although Model Cities does not impose poverty or residency requirements as does CEP, it does work in a similar though somewhat larger area which is delineated by the City Council and divided into 16 neighborhoods.

Model Cities is essentially a demonstration program which is attempting to find ways of affecting community and institutional change. As of November, 1970, it was planning to establish six neighborhood job centers in the Model Cities area which would be staffed by community job coordinators and job developers hired by the Model Cities community organization. Model Cities reports regionally and nationally to the Department of Housing and Urban Development but is in close touch with local BES personnel and with CAMPS.

The Philadelphia School District: Most educational programs are not clearly related to manpower services. However, the Philadelphia school district has instituted an automated pupil data system utilizing 900 codes which identify the city blocks in which all students live. There are a number of types of data from Philadelphia, and from school districts in the counties adjacent to Philadelphia, which are important to the planning of manpower services.

The status of the Philadelphia school district's statistical programs in 1970 was as follows:

1. A new system of reporting dropouts was in operation. Problems in counting dropouts involve double counting of dropout returnees as new enrollees and also certain teacher biases in reporting.

2. There was a tendency in vocational education to focus on courses taken rather than tracks. Follow-up on vocational

education students who had left school was difficult because of high mobility.

3. Plans of graduating seniors had been surveyed by the Pennsylvania Department of Education, but the results were of questionable validity. Special studies by the Educational Systems Research Institute have gone into plans following high school in some detail.

Data on institutional training programs, adult basic education, and the Health Occupations Educational Program are available from the school district's subsidies division and/or the state Department of Education.

Program Management Levels Above the Local Office

A. The Local Area Level

The eight-county Philadelphia SMSA (see Figure 1) includes parts of two states, all or part of three BES district organizations, eight different public assistance organizations, and a host of other manpower agencies. Only the district office of the Pennsylvania Bureau of Employment Security exercises strong influence at the area level. District 1, with headquarters located in Philadelphia, includes a high percentage of the area's manpower and employers and a concentration of manpower agencies and programs. The district includes nine local ES offices and a WIN office. Four other local offices are located in Philadelphia and in Bucks, Delaware, and Montgomery counties.

The Philadelphia District BES: Both the CEP organization and the mayor's Manpower Utilization Commission are partially staffed by district BES employees.

The district office provides staff services to local offices; collects information required to make decisions regarding the allocation of personnel and budget among the local offices; collects weekly information on the volume of program activities; provides information required to prepare the annual plan of service; and reviews estimates of the universe of need, anticipated demand for services, and required staff included in the plan of service. ESARS data are sent directly from local offices to the program office in Harrisburg, but the district office instructs the local offices on how to collect the ESARS information and serves as an intermediary distribution point in the flow of ESARS tabulations returned to the local offices.

A management methods section collects a variety of data on operations from the local offices which it uses to monitor employer visits and manpower services provided. In addition, data on manpower training are collected from other agencies and programs such as the Kennedy Vocational Training Center, Opportunities Industrialization Center (OIC), and Jewish Employment Vocational Services (JEVS). Some of these data are collected by district BES employees who assume staff coordinating responsibilities for the Philadelphia CAMPS.

Statistical services are also made available to CAMPS and to nongovernmental agencies which receive the monthly Labor Market Letter. The basic data for these tabulations are processed in the Harrisburg BES office, but some are supplied by the U. S. Bureau of Labor Statistics from its monthly sample survey of employers.

Beginning in May, 1970, new area labor market information reports (replacing ES-219) were introduced in the federal-state employment service and training reporting system. Called for were

a monthly Labor Area Summary (LAS), a narrative and statistical information on employment and unemployment trends in 150 major labor areas, and a semiannual Area Manpower Review (AMR).

The analytical report (AMR) covered employment service and manpower operations and contained a public section and a confidential section, both designed to provide labor market information required for decision-making purposes. This report deals with work force, employment and unemployment, occupational shortages and surpluses, anticipated employment, and manpower program activities and problems.

It contains operational data on the number and occupations of persons registered for work, persons filing claims for unemployment benefits with local offices by sex and type of claim, and the past, present, and required future employment of individual establishments as well as groups of establishments. Labor turnover data by industry and narrative accounts of actual events with economic significance are also included, as well as the conventional estimates of population by work force and employment status, employment by industry, and hours and earnings.

Occasional surveys of unfilled openings by occupation and occupations with anticipated shortages based on projections made by placement offices are also assembled by the Reports and Analysis Section of the district office. Special reports on NAB-JOBS, older workers, and youth are prepared for Washington.

Requests for data from employers, researchers, and the public are varied. In July, 1970, many area employers sought data on the racial composition of the labor market area in order to

comply with requirements of equal employment opportunities legislation. Requests for data on wage rates are frequent.

B. The State Level

Four Pennsylvania state agencies are involved in manpower programs which are administered at the local area level: the Departments of Community Affairs, Labor and Industry, Education, and Public Welfare. In the 1971-72 program budget for the Commonwealth of Pennsylvania, four program subcategories are listed under "Economic Development of the Disadvantaged and Handicapped." These subcategories and the funds requested for the fiscal year 1971-72 for the four major departments are shown below (in millions of dollars):

Program Subcategory	Public Welfare	Labor and Industry	Community Affairs	Education
Income Maintenance	$432	30	-	-
Achieving Economic Independence for Socially and Economically Disadvantaged	2	2	4	6
Achieving Economic Independence for Physically and Mentally Handicapped	1	7	-	-
Community Action Assistance	-	-	1	-

State Bureau of Employment Security: Larger than most state government departments, the state BES is organized into several offices, all of which are concerned in some way with local area information.

1. Employment Service Office is responsible for the overall administration of placement, applicant services, community services,

NAB-JOBS, and the WIN program and hence involved with information for planning, monitoring, and evaluating such programs. Responsibility for CAMPS activities also rests in this division.

2. Field Operations Office is concerned with the allocation of resources among district and local offices and requires information to plan, monitor, and evaluate the adequacy of such allocation.

3. Program Office has responsibility for preparing and analyzing research and statistical information and for devising methods and procedures for processing information. The overall responsibility for assembling planning and evaluation information and for monitoring manpower and training programs is also included in the division. Statistical bulletins prepared by this office include quarterly and annual publication of employment and wages by county and industry and monthly activity reports for the local offices in the nine ES districts in the state. The activity statistics include

a. number of job openings (received and available).

b. number of placements (nonagricultural and agricultural).

c. new applications for work.

d. number of counseling interviews.

e. number of individuals tested.

f. number of employer visits.

g. number of claims for unemployment compensation (initial and continued).

h. number of enrollments in training.

i. number of job development contacts.

Many of these series are presented for nonwhite, veteran, and disadvantaged groups and by specialized type of training program.

Beginning with data for April, 1971, tabulations have been based on the ESARS data rather than on hand tabulations from the local offices.

The Research and Statistics Division of the Program Office also prepares special reports, e.g., on the labor force and claims status of workers who have exhausted their unemployment compensation benefits, trends and characteristics of workers filing claims for unemployment insurance, and the experience rating of employees. The Manpower Planning Report for the Philadelphia Area (June, 1968), a prototype report, was prepared by the Job Market Research Center of this office. Data needed to estimate the "universe of need for manpower services" used in the Annual Manpower Planning Report for both CAMPS and ES plans of service are supplied by the Research and Statistics Division.

4. Administration Office has responsibility for several subsystems of management information: budgets, fiscal accounts, personnel, and leases and building programs. The classification and processing of cost data to be distributed to local cost centers is an information project this office was engaged in during I970 and 1971.

5. Electronic Data Processing Office processes data received in the Employer's Report for Unemployment Compensation (form UC-2) and the ESARS forms as well as a number of other information series collected from employees and local offices.

Two other offices, Benefits and Allowances and Tax Collection and Field Accounting, oversee local office responsibilities in these areas and the liability of covered employers in the unemployment insurance program.

Bureau of Human Resources (BHR) in the Department of Community Affairs: In addition to administering the Pennsylvania Manpower Employment Assistance and Training Act of 1968, which authorized a $9 million training program and which had entailed monitoring operations in the Philadelphia area, the BHR was involved through the governor's Manpower Task Force in the preparation and distribution of a Directory of Manpower Training Programs which appeared in October, 1970.

BHR used a 1969 report prepared for the Pennsylvania Department of Education, Vocational, Technical and Continuing Education in Pennsylvania: A Systems Approach to State-Local Program Planning, as its main source of planning information on occupational needs.

Monthly agency reports cover fiscal and program review. An effectiveness study was commissioned on bureau programs; the response to follow-up questionnaires on participants in the programs was between 25 and 35 percent.

When interviewed for this study, the director of the BHR stated a need for data for planning purposes for geographic units smaller than labor market areas and counties. In his opinion, information on transportation facilities for workers is a crucial element in manpower planning.

The local representative of the BHR in Philadelphia reported excellent coordination with the district BES office. Particularly valuable was the reaction of BES staff to program proposals and the pooling of information about proposed training programs such as the prospects of being able to recruit trainees and find jobs for them after the program has finished. If work is unattractive and if the net income from the work after taxes is less than the gross income

from untaxable public assistance payments, it will be difficult to recruit trainees.

Bureau of Special Services (BSS) in the Department of Public Welfare (DPW) administers a number of work-training programs for disadvantaged groups, including students from low-income families. In addition, the Department of Public Welfare shares responsibility for the WIN program with BES. The BSS receives weekly reports on the number of recipients of public assistance who are referred to WIN; these reports also go to the BES.

For the Neighborhood Youth Corps program a Department of Labor-Manpower Administration "Enrollee Record" form[16] is used for personal data and enrollment action. DPW forms for enrollee record and enrollee progress reports[17] are used for the Commonwealth Careers Program.

Bureau of Vocational, Technical, and Continuing Education in the Department of Education: In addition to the Bureau of Educational Statistics, which collects reports on enrollments, expenditures, staff, and district "censuses" of school age children, the bureau is in the process of implementing a vocational education management information system (VEMIS) using federal funds provided by the 1968 Amendment to the Vocational Education Act of 1963.

VEMIS utilizes data from a number of sources: student registration optical scanning forms, school administrative records, follow-up studies of students after graduation, and financial and

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[16] Form NYC-16.

[17] Form PA 265-266.

enrollment reports of school districts mandated by the state and federal governments.

The ultimate objective of VEMIS is to provide information to "convert undeveloped manpower resources in sufficient quantity and kind so that the output will approach equality with the skilled manpower requirements of the expanding U. S. economy."[18] A central conceptual problem is whether training is for local, state, or national manpower needs. Because of the difficulty of identifying managerial functions in the early stages of the systems development, the collected data are presently being examined and analyzed in order to specify decisions and functions leading to program goals and objectives. Likewise, the distribution of information outputs has not yet been made final, although recent reorganization of vocational education districts within the state into 84 regional planning and 29 intermediate units suggests tabulations geared to these areas. Each of the five counties in the Philadelphia SMSA has one intermediate unit; there are eleven regional planning units in the five-county area, including one in Philadelphia.

VEMIS has the capacity to tabulate and distribute data for individual school districts, but there is concern about too-wide distribution because of possible misunderstanding of the follow-up data.

An important implication of VEMIS is that it can satisfy the state and federal reporting requirements of school districts. It

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[18] Follow-up survey, "Report for Vocational Program Graduates," prepared by the Educational Systems Research Institute and the Pennsylvania Department of Education, October, 1967.

has been designed to collect more information than is presently required in anticipation of possible changes in reporting demands.

CHAPTER III

MANPOWER MANAGEMENT DETERMINANTS OF DATA NEEDS

Data Implications of Management Authority

An overview of the management function of any organization must recognize a circularity in what is essentially a process. Management is not a one-time activity but a continuous activity which has several distinguishable characteristics. At the outset this function will be presented in general terms. Specific content will then be provided for the variables by relating this model of the management function to an organization which is oriented toward the production of a good or a service. This general model, while applicable to either product-oriented or service-oriented organizations, is not limited to private-for-profit enterprise alone. The descriptive model will be related later in this section to the management of manpower programs.

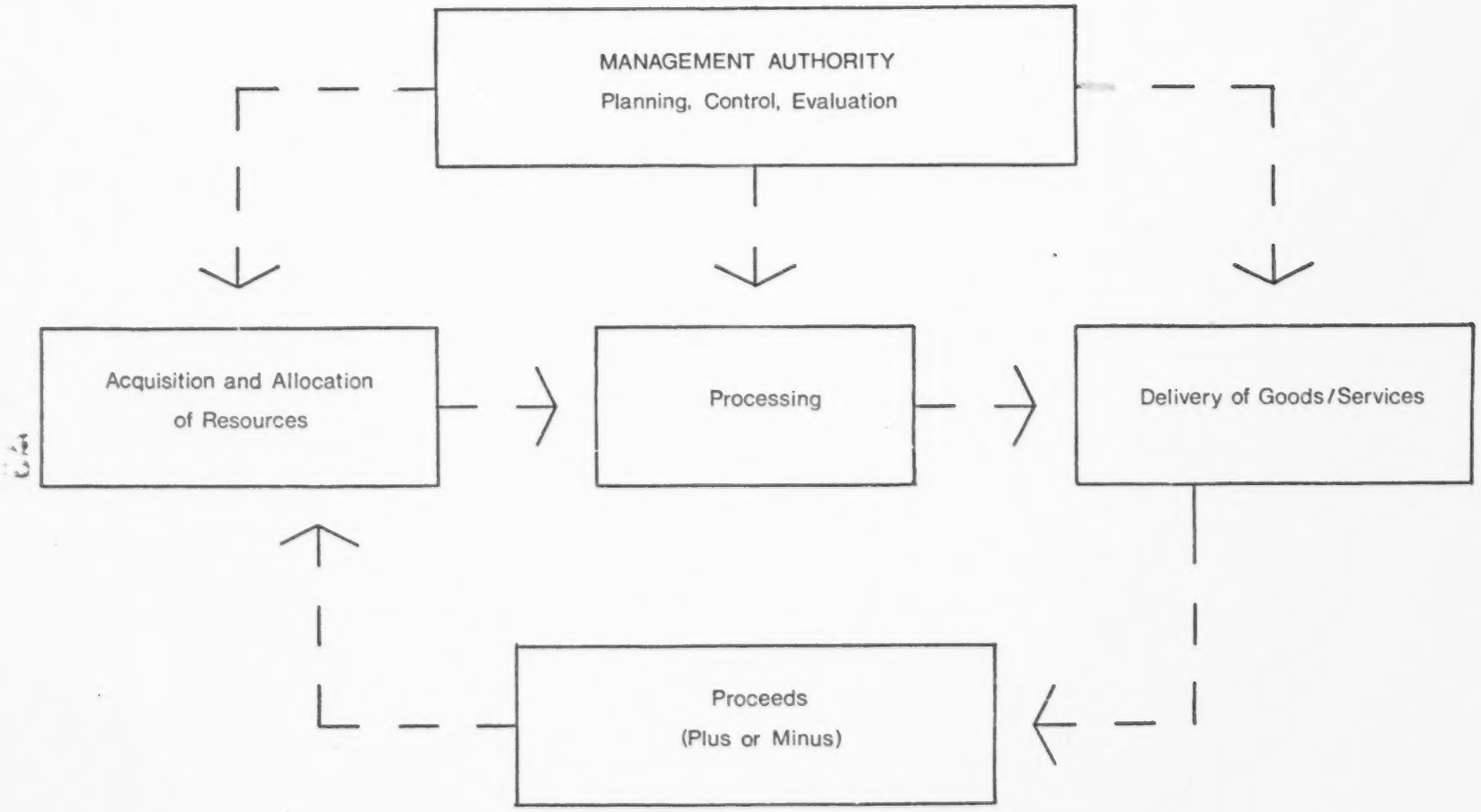
The management function of an organization can be thought of as beginning with a recognition of its environment: What are the desired goals or objectives? What are the feasible activities which can be used to achieve these possible goals? From this recognition management must identify the goals or objectives of the organization. Incrementally, or simultaneously, it must also select the means for achieving the goals or objectives of the organization. After these decisions have been made, the implementation phase begins: carrying

out the tasks called for by the previous decisions. Finally, the results are evaluated in terms of the initial goals and objectives. This evaluation--together with a recognition of any changes in the environment--provides input to the recasting (or continuation) of the initial decisions on goals and methods of achieving them.

Viewed this way, the management function is pervasive and is the critical element in program implementation or performance. Identification of authority and provision for organizational entity are important for management functions. The determination of the mission or role of the program necessitates recognition of needs, potentials, and/or trends of significant variables. This is usually carried out by a specific unit called a planning staff or a market research unit. An engineering staff or operations research unit may identify the feasible set of technical possibilities to be considered in the selection of ways of achieving the organization's goals. A production activity may be required to transform resources into products, or highly specialized professionals may be needed to deliver the actual services which the organization wants to deliver. In all of these specific activities it is possible that separate functions (e.g., planning, design, production) may exist. These will be subordinate to, and will derive the reason for their continued existence from, the management function.

A model or an organization whose goals or objectives are applicable to either the production of tangibles or the delivery of services is presented in Figure 4. The lower portion of the figure relates to a self-contained organization (such as the "firm" according to classical economic concepts). One major function is the

Figure 4. FLOW PROCESS IN ENTREPRENEURIAL ACTIVITY



gathering together and allocation of the resources which the firm will use; another is the production process or development of services. Processing may be thought of as transformation of physical items with respect to form, time, or space, or as the combining of services (e.g., a real estate firm). A third major function is the actual delivery of the product or service.

Following from this are the proceeds (profit or loss in private enterprise) which comprise the return for the goods or services provided by the organization. In a private-for-profit (not endowed) operation the survival or continuity of the enterprise and the conduct of the three major functions are dependent upon the proceeds received. In economic theory an organization which can continue to exist is presumed to have demonstrated its economic worth to society.

When an enterprise or institution is not dependent upon the proceeds derived from its goods or services (as in the case of endowment or public financial support such as taxes) the criteria and standards for evaluation do not turn on profit and loss statement review. Nevertheless, the elements of program management are generally the same as in private-for-profit organizations. The delivery of the goods or services in such an enterprise generates information which, when related to program goals, provides the basis for an evaluation of the organization's effectiveness.

Although the components, and indeed the substance, of the management function may be similar in both private and public organizations engaged in operating activities and services, there are important differences in the lines of authority and the nature of their

exercise. The singularity of authority and the direct line for its expression found in business enterprise--as in the president of a firm, the executive director, or the chairman of the board--has no counterpart in public agencies. In fact in our democratic and republican form of government, authority is divided among the legislative, executive, and judicial branches and between the federal and state governments. This system of checks and balances, with ultimate authority residing in the electorate, introduces certain characteristics in program management and data requirements which are not found in private business enterprise.

In the case of public agencies responsible for the administration of human resource and manpower programs, the management functions and data needs are further complicated by the multiplicity of statutes creating and defining the manpower programs and services to be provided. In addition to the legislative complexities which arise, and the program fragmentation which is created, the limitations on authority exercised at the local, state, and federal levels in program execution inevitably lead to confusion in program management.

To these problems must be added those which arise from administrative channels of communication and the need for seeking financial support and authorization in situations where tax raising and spending responsibilities are divided. Because the implementation of manpower policies and programs--the actual delivery of manpower services and the resolution of individual manpower problems--takes place locally, this level of program management bears the burden of supervisory layers, represented by an inverted management pyramid.

The manpower resource is in many respects a unique resource, and therefore the agency responsible for the administration and delivery of services to deal with manpower problems must take account of the unique scope and interests manpower encompasses. In its broadest context manpower involves people, economic structure and processes, the ecological aspects of residence and workplace location, and services which enhance employability and reduce frictions in labor markets. The agency settings for manpower programs in a local area are characterized by diverse and complex activities carried out by units organized by level of government, by agency, and by geographic divisions.

During recent years there has been increasing concern about the need for more local area program management and for more effective coordination of programs. Both require current, comprehensive, and accurate manpower information which is not presently available. In determining the data requirements to support various managerial functions at the local area level, it is necessary to distinguish between those data essential to the delivery of manpower services and needed by first-line supervisors in a local office and those which are to be used for program management at the local area level.

Major Components of Program Management Function

The various components which comprise the manpower program management function may be identified in a few broad categories or they may be broken down into a number of refined and specific activities. In either case they are neither independent nor discrete: each is interlinked with the others, and there are no clear-cut lines of demarcation. Nor is there a special logic or preference to the

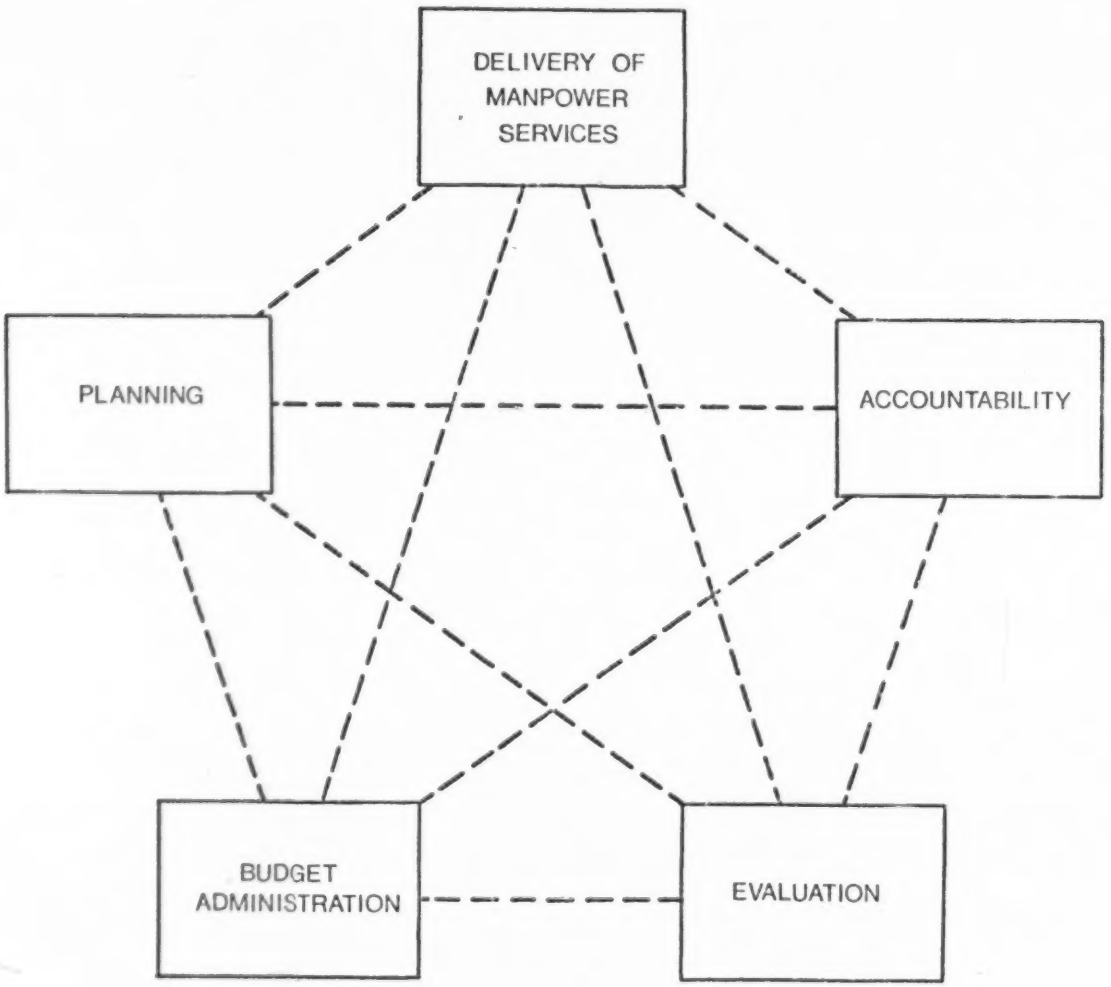
order of their arrangement or the sequence of their analysis. (See Figure 5.)

Five major components of the manpower program management function are delivery of manpower services, accountability, evaluation, budget administration, and planning.

This report is concerned with program management and information needs at the local area level, where the primary mission of the staff resources and facilities is the delivery of manpower services. This chapter, therefore, begins the discussion of how program management determines data needs by considering the delivery of manpower services. (If the focus of the report were directed to the national or state level, the initial discussion would deal with planning and budget administration.)

Manpower staff specialists in the local office adapt and use data found in the applicant file or employer record to deliver manpower services directly to the client. Information from these sources is used as the basis for diagnostic, remedial, and rehabilitative services for individuals or for employer relations services without being summarized into aggregates. First-line supervisors in the local office monitor these individual record files and review the services provided. They compare services for various client groups and familiarize themselves with sources of variation in service delivery among staff and over time. Supervisors aggregate some aspects of clientele characteristics or staff services for management reporting. These supervisory activities within a local office do not constitute program management at the area level.

Figure 5. MANPOWER PROGRAM MANAGEMENT ACTIVITIES



Program management at the local area level needs a broader scope of aggregation than that required by first-line supervision. Rarely interested in individual records--except for large-sized employers or exceptional cases with needs or problems which affect an entire project or program--program management is concerned with the overall operation of individual programs in specific localities and within specific time periods. Because of fragmented programs and separate appropriations with different geographic focuses and timing, the task of assembling comparable information on manpower programs is often a difficult one (e.g., in the CAMPS planning documents).

For the manpower program in a local area, the management function is concerned not only with the supervision of individual local offices but also with the summation of their experiences and interagency implications. While local office managers may need the information generated by their delivery of services to make future decisions, the area program manager may require similar but less detailed information so that he can provide a broader geographic base and time perspective to the management of the area manpower program.

A complication in identifying data elements needed to support local area manpower management functions is the present sharing of managerial responsibilities among local, divisional,[19] state, regional, and federal organizational levels. Although information for local area management frequently has important implications for higher level management, the emphasis in this report is limited to local area considerations.

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[19]Divisional in the sense used by the Pennsylvania Bureau of Employment Security as referring to combinations of local office areas.

Manpower Services Delivery. The core of program operations is found in the manpower services provided to the individual recipient or employer; the allocation of staff resources and facilities for the delivery of these services; and the fluctuations in the volume and kinds of services delivered locally. When information related to the operating activities is properly aggregated and classified by the characteristics of the clientele receiving these services, it has value for program management on an area-wide basis.

The most ambitious system for providing information needed for managing services is the Employment Security Automated Reporting System (ESARS). Most of the initially proposed tabulations based on ESARS records of individual participant characteristics, participant status in manpower programs, and the services participants have received are based on client characteristics (including classification in selected disadvantaged or veteran priority groups), services received, and program status. Specific individuals can be identified with services provided and both the number of individuals served and the number of services can be tabulated; this was not true of similar summaries used in the previous Bureau of Employment Security (BES) activities reporting system. Most tabulations are planned for monthly and fiscal year summaries and will be made available to local office cost centers and to district offices. However there is presently no provision for identifying geographic parts of counties (other than local offices) or parts of local office areas in which clients reside. Local office codes give some idea of the geographic parts of a large city such as

Philadelphia, but the residence of the client may not lie in the part of the city covered by the local area office boundaries.[20]

While job order numbers can identify the employers to whom job seekers are referred or with whom they are placed, few characteristics of employers are presently recorded on administrative forms in a manner which would permit tabulation. With the de-emphasis on employer services activities in most local offices during the past eight years (when employability services were given priority), data on employer record cards have not been kept up to date or even completed. A supplementary source of employer information which could be useful for local management purposes is the quarterly UC-2 form for unemployment insurance which records wages and Social Security numbers for each employer and details changes in ownership of firms. These forms are processed in Harrisburg for state rather than local area use.

Data on program performance also are obtained from the monthly time distribution reports of Employment Security employees, which record hours of time worked daily by source of funding (project) and by activity function.

Ideally, three types of administratively derived data are needed for local area management of service delivery:

1. Tabulations of all manpower services given to individual participants with a distinction made between recipients of single and isolated services, multiple services of the same kind, and multiple but discretely different services of a sequential nature. When different clientele groups--such as veterans or disadvantaged persons--

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[20]A requirement only of the Concentrated Employment Program.

require different methods of service delivery or must be assigned priorities in service delivery, separate tabulations should be made for such groups.

Because the sequence of services provides an index to the changing status of participants and their progress through the manpower services system, the time reference of the services and status changes is important. Activity reports have been tabulated both weekly and monthly, but ESARS' tabulations are not planned for less than monthly summaries.

2. Summations of data reflecting services to employers and actions flowing from them. These include orders taken and job referrals and orders filled, together with certain characteristics of the employers such as their location by subareas within the metropolitan area, size of plant, occupations of workers, and labor turnover experience. Some of these data are available from the Job Bank statistical form; others could be obtained from up-to-date employer records, field contact reports, and statistical survey forms.

3. Summaries of staff resource time assigned to specific functions. Such data are presently collected for each Employment Security employee for each work day on a monthly "Time Distribution Report." When function codes are made final the state BES plans to distribute these data, summarized by function, to local and district offices. From these time summaries and the totals of services rendered, operating ratios of services performed per man-day can be computed for various functions. A comparison of the operating ratios among local offices and over time will enable management to detect

abnormally high or low productivity for further investigation and will serve as a basis for allocation of staff resources.

The uses of services delivery information--in addition to monitoring activities, allocating resources, and shifting operating priorities--include all four of the other broad program managerial activities.

Accountability. The nature of the manpower programs, because of the kinds of manpower services rendered and their impact on the daily lives of people, places considerable stress on accountability of program stewardship. This function of program management calls for reporting program experience to legislative offices, executive management, and budget authorities, and for developing improved public understanding and support. Specific areas of accounting include expenditures, use of resources, relationship between manpower services and problems, bases for changing priorities, and results achieved through manpower services.

Data required to discharge the accountability activity encompass services performed, results of services as related to the goals or objectives of the manpower program, staff resources used, and costs incurred. Information about services rendered to high priority target groups and about their characteristics frequently reveal aspects of the problems suggesting the need for manpower services.

Other objectives of accountability include improved public understanding of the manpower program, acceptance of manpower goals and priorities, and support of the program through participation and cooperative efforts. At the local area level, the community as represented by its formal and official organizations--political,

governmental, and other similar institutions--as well as by the informal power structure, wields considerable influence over the prospects of program management achieving its goals. The significance of sound public relations, especially keeping the "man on the street" informed, is particularly important to effective program performance. To this end the information required to carry out the accountability activity is coextensive with the range of manpower services and the multi-facets of program activities. Not only are the data requirements for this management activity comprehensive, but they must also meet the tests of currency and accuracy--conditions not presently met by the state and federal focus of program accountability.

In addition to the public aspects of the program accountability activity, there is an internal, local aspect closely related to monitoring service delivery by top local area management which can serve as a healthy stimulus to improved performance by local subarea offices within the metropolitan area. Local office data can be provided with an understanding that they are confidential and not for public distribution. For example, the Philadelphia County Board of Assistance distributes monthly caseload and staff data for each of the nine local offices in Philadelphia. Public disclosure of such data might result in unwarranted pressures to redistribute staff resources without adequate knowledge of reasons for variation and pertinent aspects of resource deployment.

The current use of different local administrative subareas will present difficulties in comparing staff and activities in subareas and comprehending the relationships among categories of problems and programs. Even if various manpower and manpower related agencies

continue to use local office administrative areas with different boundaries, uniform metropolitan subareas locating residency of clients and sites of employing establishments will enhance delivery of services and permit manpower problem indicators for neighborhoods, Model City target areas, and concentrated areas of unemployment.

At the state and federal levels, the accountability activity for the program management function requires less detailed data than are needed at the local area level. Program perspectives are expected to be much broader at these levels than locally. While such considerations as currency, accuracy, and confidentiality may be equally applicable, the public information media--newspapers and other publications, radio, and television--at the state and federal levels call for different aggregations of program data and experience and are directed to underlying issues and long-term trends. Care must be exercised that reported data reflect program interrelationships and impacts accurately. For example, monthly savings of public assistance costs for WIN participants who find employment cannot be used for accurate estimation of yearly agency savings unless employment is continuous.

Another aspect of accountability, allied to budget administration, is a comparison of projected activities and their costs with actual performance and expenditures. For example, the BES will use data on services from ESARS and costs from their personnel and financial information subsystems to compare projected activities in the local office plan of service with actual activities during the first six months of the fiscal year.

It is important to recognize that program accountability is neither as restrictive nor as narrow as cost or expenditure accountability. While the management function should not overlook these fiscal considerations, the purposes should be broader. Thus, provision is made in program planning budget system (PPBS) budget administration to measure the impact or effects of programs on the environment or on individuals. This aspect of accountability is also important for evaluation and the planning of delivery of services. However, without a public understanding of the relationship between manpower services and desired outcomes, neither the necessary public support of the programs nor the most effective public use of manpower services will be possible.

Evaluation. Each of the other managerial functions contributes to the program evaluation function and is, in turn, influenced by evaluative findings. When activities or efforts are compared with predetermined program goals an evaluation of services or staff time is permitted. The establishment of goals or targets, together with indicators of performance (usually activities, transactions, or services, in quantitative terms) introduces the elements of required recordkeeping--the items to be transcribed, and the transmittal and processing of these items--all of which tend to determine the character of the information system.

Unlike a monitoring of manpower services delivery which determines what is happening, evaluation compares results with predetermined outcomes and attempts to determine how well a program or project works. Measurement of operating performance in the past has been in terms of honesty (no embezzlement), prudence (no profligacy),

cost control, or gross output standards,[21] but the thrust of evaluation in PPB systems is toward cost-benefit and cost-effectiveness analysis.[22]

In order to establish meaningful and relevant performance criteria and yardsticks for measurement of achievement, it is necessary to have both a better understanding of the dynamics of manpower functions and an improved basis for planning and budget administration. Vexing questions regarding appropriate models of behavioral change, research designs for collecting follow-up information on participants and employers, and measurable aspects of the achievement of manpower goals are involved. While measures of employment, income, continuity of employment, increased productivity, and occupational change can all be used as measures of success for employers and employees, a proper assessment of these measures of "output" depends on identifying and weighing such interacting input factors as the characteristics of the applicant groups or types of employers, the types of manpower programs and their specific elements, and local labor market conditions.[23]

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[21]Walter Williams, "Developing an Evaluation Strategy for a Social Action Agency," The Journal of Human Resources, vol. IV, no. 4 (Fall, 1969), p. 452.

[22]Cost-benefit analysis attempts to directly measure program or project results relating benefits and costs in some manner (as, for example, by developing a measure of efficiency); cost-effectiveness analysis uses indirect or surrogate measures of benefits and attempts to analyze how to maximize benefits for a given level of expenditure or minimize costs for a given level of benefit.

[23]John Scanlon, Garth Buchanan, Harvey Garn, Joseph Nay, Ralph Smith, Richard Wertheimer, and Joseph Wholey, "Department of Labor Evaluation System for a Decentralized and Comprehensive Manpower Training Program." (Working Paper 305-2 prepared for the Department of Labor by the Urban Institute, Washington, D.C., February 1971.)

Program evaluation which turns on an analysis of services, experience, and results tied to specific individuals over a period of time (and which may involve interagency activities and interarea shifts) poses problems at the local area level. Such an evaluation involves a listing and analysis of a sample of individuals whose records might be available at the national level from such sources as Social Security or Internal Revenue Service operations. Although ESARS information is available at the national level and employer data could be developed from the economic census and other federal sources, it is doubtful that coverage at the local level would be sufficiently comprehensive to serve program evaluation needs. Whatever the level of individual record processing and collection, the problems of confidentiality and data matching are formidable.

An intermediate evaluation measure is the experience of manpower clients through a sequence of services leading to a final goal of employability at the clients' maximum potential. The fact that a participant does not drop out of the program and avails himself of the recommended services becomes a measure of partial or intermediate success. CEP performance data are designed to permit this type of evaluation. The progress of county board of assistance referrals to the WIN program is another example.

As better data are developed for employers, it will be possible on a micro scale of analysis to account for still another variable in the analysis of manpower program objectives--the internal labor market conditions of individual employers. This type of evaluation assumes an increased emphasis on employer services and a cooperative program of evaluation in which the employer would expect

to benefit from the findings. Confidentiality of the individual employee's payroll record would, however, pose a serious problem: prior permission from applicants involved would be required, as well as a firm understanding that the identity of either individuals or employers would not be made public or released for any other government or private use.

The estimation of target populations potentially in need of manpower services poses difficult methodological problems which can be only partially solved by utilizing administratively derived data--specifically data for public assistance recipients, school dropouts, or institutional inmates soon to be released. Samples of such groups may suffice to measure needed characteristic information. In addition, research not based on administratively derived data will be required. A proposed ESARS tabulation showing sources of intake by programs participated in includes "Employment Service outreach" and "welfare" as sources of intake and illustrates the type of data needed to understand how target populations are reached.

Only a part of the data required for various aspects of program evaluation are available from local area administratively derived information. Unless there is a release of individual employer wage data and Social Security numbers from quarterly UC-2 forms or some similar wage record for local area use, follow-up surveys falling outside the scope of this study will be needed. In addition, because of the large number of variables in program elements and labor market conditions that must be accounted for, the national level of program evaluation appears most promising. However, intermediate evaluation in achieving planned performance levels can be analyzed using data

on services and the statistics of clients and employers to compare with preplanned standards.

In order to meet the full needs for program calculation, special research and one-time surveys are needed as well as regularly recurring administratively derived data within an agency and operations data tapped from other agencies. Although data derived from these latter techniques are beyond the scope of this project, they cannot be ignored. Since program effectiveness often must be judged on experience when the individual is no longer within the jurisdiction of the program, it is obvious that administrative records at some stage cease to be a source of information for program assessment.

Budget Administration. This function, narrowly conceived and limited to increasingly obsolete budget processes, is too often viewed as an accounting and financial activity. However, every budget system combines planning, management, and control processes with the planning function, including the determination of objectives, the evaluation of alternative courses of action, and the authorization of selected programs.[24]

When cost-benefit or cost-effectiveness analyses are included in the budget process, any regular, recurring information system derived solely from operating data and records is likely to leave large gaps in needed information and many unanswered questions. Thus, as in the case of data needs for evaluation, the role of special research

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[24]Allen Schick, "The Road to PPB: The Stages of Budget Reform," Planning, Programming, Budgeting: A Systems Approach to Management, ed. Fremont J. Lyden and Ernest G. Miller (Chicago: Markham Publishing Co., 1968), p. 28.

for budget administration must be taken into account when an area manpower information system is being considered.

On an area-wide basis, meaningful budget administration of manpower programs is dependent on interagency cooperation and interchange of information regarding staff resource utilization, program expenditures, types of services provided, and clientele served. The provision of monthly and cumulative fiscal year services and other work input data, using as a model the system now being perfected by the BES, will serve most of these needs. However, quantities which reflect how much of a given program activity or element are needed to meet a community's total needs and which serve as achievement objectives within a specific time to establish local, state, or national goals can be obtained only partially from administratively derived data. Lacking such data, judgmental and attitudinal information gathered from a broad-based community manpower council is often used as a substitute. Although special census and survey findings would not be incorporated in a local area manpower management information system (LAMMIS), suggestions as to source of information, appropriate units to use, possible biases, etc. would, although not quantifiable, be a valuable part of the information system.

City, federal, and state requirements for budget submission presently vary, and even if there are changes in the locus of budget determination, requirements for budget submission and fiscal accountability will continue to differ. State and federal accounting codes also differ and need reconciliation.

Illustrative of the broad gauge program management implications of budget administration are the requirements contained in the

Pennsylvania PPBS plans.[25] Consisting of three documents--a program statement, a financial statement, and a manpower statement--these and the supporting documents call for the following information:

1. Program statement impact indicators (the effects programs have upon the environment or upon individuals).

2. Major outputs--output measures (quantifiable units, produced as a result of activities carried out at the element level).

3. Output need and/or demand--output need and demand estimators (how much of a given element's outputs are required).

4. Financial statement--operating and investment costs by source of funds (state, federal, and other) for direct state activities, payments to other jurisdictions, and research and development.

5. Manpower statement--man-years of salaried personnel (by professional and management; technical and semiprofessional; clerical and labor; trades and related) and personnel costs for salaries, temporary wages, and overtime and benefits.

Only part of these data for current periods can be met from administratively derived data. Intermediate impact indicators can be obtained from services rendered and participant status changes (including placement in employment). Output measures include man-hours of service, the services themselves, and payments. Financial costs and staff man-years can be obtained from appropriate subsystem data.

The major gaps in the PPBS approach include inadequate specifications for the output and demand estimates and ultimate impact indicators together with inadequate methods for projecting output measures, costs, and man-years--all needed to "convert the

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[25] Robert J. Mowitz, The Design and Implementation of Pennsylvania's Planning, Programming, Budgeting System, Report to the Commonwealth of Pennsylvania (n.d.), p. 19.

annual routine of preparing a budget into a conscious appraisal and formulation of future goals and policies."[26]

The Commonwealth of Pennsylvania's program budget for fiscal year 1971 uses only one need estimator, "number requiring employability development services," and three output measures: "persons completing training," "persons receiving vocational evaluation and counseling," and "persons placed as a result of training and counseling" for its program subcategory "Achieving Economic Independence--Socially and Economically Disadvantaged."[27] Two problems are noted in connection with measuring the impact of these programs: the large number of economic and social factors affecting the employability of persons and the lack of comparable measures among agencies in income improvement and achieving economic self-sufficiency for manpower program participants.

Planning. This function, more than any other in management, is concerned not only with past trends and current situations, but with projections over a span of future time.

Before the planning function can be discharged a distinction must be made between the immediate, short-run anticipations and the expected intermediate and longer term developments. A manpower information system which is limited to administratively derived data

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[26]Schick, op. cit., p. 28.

[27]Four agencies participate in activities in this subcategory: Departments of Community Affairs, Labor and Industry, Education, and Public Welfare. Other closely related budget categories are Manpower--Achieving Economic Independence; Physically and Mentally Handicapped; Income Maintenance (which includes unemployment compensation and minimum wage regulation); and Industrial Relations Stability.

obtained from operating records can throw considerable light on the past trends of the magnitude and character of manpower problems and services and the current situation, but it has limited value for long-range projections. In order to meet such planning needs the local area manpower management information system must be supplemented by special studies and one-time surveys. Even for short-run planning needs, operating program information is only partially satisfactory. Additional data reflecting the target population, universe of need, and environmental changes are necessary.

At least five major distinctive needs with differing time frames and geographic reference must be taken into account when consideration is given to program planning:

1. Informational requirements--public and internal.

2. Possible legislative changes.

3. Scope and character of needed services within present limits of budgeting and administrative direction.

4. Resources needed--budgetary, manpower, space, and equipment.

5. Administrative resources for program performance such as hiring and training of personnel, preparation of technical materials, and provision of space and resources.

Needed information does not automatically appear in response to demand or as a concomitant of operations or ongoing statistical programs. Accessible data must be carefully organized and processed to fill part of the information needs. Knowledge of the timing, scope, and limitations of relevant statistical programs must be combined with an appreciation of the feasibility of local area surveys and new tabulations of administratively derived data and the specific uses to

which this information can be put--not only for planning but also for other managerial functions.

Planning information is enhanced by cost-benefit analysis applied to presently processed information. It is true that it is easier to initiate a new program of collecting data than to stop one which has outlived its usefulness. Forms control is an important aspect of an information system and is needed to achieve a planned information program which will exclude unnecessary data collecting and processing. Such controls exist to some extent in the state and federal governments. A similar control is necessary at the local area level which will be responsive to local needs and plans.

Legislative needs are rarely initiated at the local level, but grass roots program experience as well as information required for budget administration and services delivery are an input to federal and state legislative planning efforts. Except to test the effects of possible formulas for the distribution of funds among states or local areas, variation among geographic areas has been of less concern to legislative staff than differences in plans and capacity among agencies with manpower programs. However, because of the concentration of analytical skills in legislative research groups, the deficiencies of manpower information become evident. Research efforts to meet the needs for manpower information through legislative provisions reflect this concern.

Plans for services needed have generally been fitted into state and federal budgetary plans using the same time perspective.[28]

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[28]The Commonwealth of Pennsylvania PPBS uses a current fiscal year, the two previous fiscal years, and five future years. The

Planning documents and statistical tables which serve as a background to the formulation of plans of service utilize longer periods reflecting the decennial timing of the population census and the length of time required to distinguish secular trends from business cycle influences in manpower data.

The geographic areas used in planning services delivery are shaped by the organization of manpower agencies and their programs. The Philadelphia Employment Service's local plan of service reflects local office areas, the WIN city-county wide program, and the CEP North Philadelphia poverty area. These service plans are combined into a composite district plan. Attempts to relate the geographic location of target populations and the universe of need have not been entirely satisfactory because of the limitations of census data and the lack of small area tabulations of operational data.

Plans for resources needed are influenced in respect to both time and geographic detail by federal and state budgetary practices. The differences in these practices have posed problems for the operating agencies, which must prepare information in two ways, and for the state budget office, which has encountered difficulties in obtaining uniform data from agencies. The state manpower plans and budget requests omit reference to programs not financed from the General Fund and hence disregard BES programs which are federally financed. State budget planning does not go into geographic detail but depends on agency submissions of state data. Federal budgetary

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federal BES local office plan of service requires only a current one-year manpower data summary and a one-year statement of anticipated services and resource needs.

requests are based on consolidating and costing local office plans of service.

Administrative planning involves a significantly different approach to both time and geographic specifications for data. The logistic realities of relating services to needs require fine detail in time schedules and flexibility in allocating resources among office locations in response to shifting target populations and changes in program emphasis. Even schedules by month or quarter, with as much geographic detail as possible, are needed. For example, data from both the county board of assistance and public assistance recipients and from the schools on dropouts for subareas may be useful geographic indicators of anticipated workloads.

The annual Manpower Planning Report for the Philadelphia labor market area, the local office plan of service for District 2, and Parts A and B of the CAMPS Comprehensive Manpower Plan for the Philadelphia SMSA all contain data which have potential application for administrative planning. Included in these reports is such information as:

Characteristics of the disadvantaged--In addition to the above sources, traffic surveys of selected offices in poverty areas and monthly unemployment insurance claimants sample surveys are all administratively derived.

Manpower requirements--The changing composition of job orders, if properly interpreted in comparison with job demands filled through private sources, can reveal changes in labor market conditions and in changing demands for employer services.

Program workload data--These have great potential and have, to date, been minimal with the number of slots, number served, or amounts of funds available to the main quantifiable data presented. The Employment Service, in particular, should present fuller data for activities, individuals served (including geographic location), and staff resources employed. A knowledge of what present manpower programs are and the input and output of all manpower agencies is a necessity for comprehensive planning.

Perhaps no component of the manpower program management function is so dependent upon information--frequently from sources outside the program--as that of planning. The socioeconomic environmental situation within which the manpower program must operate probably represents the single most important influence which determines the success or failure of the manpower program. Information when related to this situation--such as the level and rate of economic activity, the state of the labor market, population trends and changes, and similar data--is basic to the planning activity of the program management function. The universe involved far exceeds both the universe of need and, even more, the data limits established by operations experience. Only limited segments of such universe data are available on a regular, recurring basis; there are long intervals (sometimes five and ten years) between data collections. In these circumstances, the planning activity requires that approximations of such universe data, derived from administrative records, be undertaken to meet program management needs.

CHAPTER IV

THE PARAMETERS OF A MANPOWER INFORMATION SYSTEM

Characterization of Information Systems

The increased capacity to process data through the use of computers, the development of new quantitative tools of analysis and management, and the emergence of urgent and complex problems in government and business placing greater stress on program management and performance during the last quarter century have produced an explosion in the exploration of information resources and a need to organize information into systems for reaching decisions.

Computerization is so widespread in the federal government for the storing, processing, and retrieval of data that it became necessary in 1965 through Public Law 89-306 to assign responsibility for improving the procurement, utilization, and management of computers and related information systems to the Bureau of the Budget (now the Office of Management and Budget), the General Services Administration, and the Department of Commerce.[29]

In response to these needs information systems have been designed to meet a variety of purposes ranging from sophisticated

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[29]Executive Office of the President, Office of Management and Budget, Statistical Policy and Management Information Systems Division, Statistical Reporter (August, 1970, No. 71-2), pp. 21-24.

statistical systems consisting of social aggregates to intelligence systems which raise fears of instant revelation of an individual's most private records. The increased role of government in human affairs expands the need for more effective communication among levels of government, and sharing of tax revenues has led to research and development of municipal, state, and federal information systems. The ability to introduce increased efficiency and profits has given rise to widespread use of automated data processing (ADP) and data systems in business enterprise. Increased acceptance of and reliance on planning has led to new organization of environmental data and the integration of census and local sources of data.

Differing approaches have been used and continue to be used in developing information systems. After a state of development in business in which independent automated information systems were recognized to be inefficient, a second state followed in which integrated data processing, or a "total systems" approach, became popular. Information systems development was assumed to be a homogeneous operation which should be the responsibility of specialists in systems departments.[30] Compulsion to gather, store, and retrieve data took precedence over an understanding of the theoretical and operational framework of information systems, and "busy-working" computers were

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[30]John Dearden, "How to Organize Information Systems," Harvard Business Review (March-April, 1965), reprinted in Management Information Series (Cambridge: Harvard Business Review), pp. 19-20.

substituted for overflowing conventional files. This occasionally resulted in a false sense of security.[31]

Instead of using computer technology to strengthen research functions and to devise methods for inferring conclusions from a comparatively small number of observations, those responsible for information systems relied on aggregates of data (not always relevant), faster and more powerful computers, and specialists in computer technology.[32]

In addition to recognizing the importance of organizing relevant facts, people, equipment, and procedures to attain the objectives of the information system, managers began to focus increasing attention on the stages of development of automated information systems and the relationships among major and minor subsystems of data. The specification of data to be used and its organization become important developmental aspects.

Before data can be programmed or processed, decisions must be reached about what information is required by prospective users and whether it can be obtained and provided. There are several approaches to data specification. One view is to computerize all available data and to program output on a demand or ad hoc basis. This approach is based on the assumptions that all data are

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[31] Ida Hoos, "Systems Analysis, Information Handling and the Research Function: Implications of the California Experience." (Internal Working Paper No. 68, University of California at Berkeley, November, 1967.)

[32] Ibid.

potentially relevant and that information needs cannot be adequately anticipated. It can be criticized as producing an excess of "information" which may contribute to an intelligence gap rather than solve problems.

The antithesis of the "take everything" approach is to investigate what information is needed by whom and for what purpose and to identify unnecessary data which need not be processed. In considering management needs this implies a grasp of managerial roles--responsibilities, authority, and relationships among executives--in an organization. Such roles are seldom clearly defined.[33]

A third approach is to identify flows of information associated with decision-making activities, evaluate the flows, and design new information flows. Decisions, rather than decision-makers, become the focus of investigation and must be classified into general areas and identified with respect to a time dimension and their relationship to allied decisions.

In considering the specification of information needs for local area manpower program management, the complexity of the organization structure and information flows and the centralized and diffused nature of program management decisions present serious problems of analysis. In the Philadelphia SMSA Comprehensive Manpower Plan for Fiscal Year 1971, 53 organizations were listed as members of the

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[33] R. Ronald Daniel, "Management Information Crisis," Harvard Business Review (September-October, 1961), reprinted in Management Information Series (Cambridge: Harvard Business Review), p. 93.

Philadelphia Area CAMPS and 38 agencies cited as providing one or more of 17 manpower and manpower related activities.[34] Although some of the organizations had minimal activities to report, it would require a major effort by most agencies to describe state, federal, and internal reporting requirements in their entirety.

Because of the small number of program management decisions which could be identified at the local area level and the costs of analyzing information flows, only a small proportion of which are related to managerial decisions, the approach used in the present study was to investigate the nature of the present structure of data fashioned from operating records, the nature of the major information subsystems which have been or could be fashioned from these data, and the data requirements of local area program management.

Government Interest in Local Area Information Systems

The importance of computers and data processing of local area information became evident with the recognition of the infrequency of decennial census data and the need to relate Census Bureau data to local and state data to meet specific needs. The Bureau of the Census, with the financial support of four other federal agencies, conducted a small-area data research study in New Haven, Connecticut, from 1966 to 1969.[35] This project also investigated the benefits of cooperative

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[34]Part B, pp. E 1-9.

[35]U. S. Bureau of the Census, Census Use Study: General Description (Report No. 1., Washington, D.C., 1970).

data collection between the Census Bureau and other local, state, and federal agencies.

The form and level of detail in which census data should be made available to local users were considered in the study, as was the testing of techniques whereby local agencies could combine data from their own records with census data. In order to explore the current and future needs for small-area data and data handling and display techniques, research was conducted in the following areas:

1. Geographic base systems and address matching.[36] Because initial contacts with local agencies had revealed conflicting area definitions, a process called Dual Independent Map Encoding (DIME) was developed to create a geographic base file from a printed map that could be used as an input to computer matching and address matching techniques. The address matching, called ADMATCH, assigns geographic codes from the reference file to local records and permits the tabulation of data from diverse sources for uniform geographic areas.

2. Computer mapping. Both DIME and other techniques were tested for computer mapping of census and local data. Mapping techniques were used to identify social indicators and resources such as health risks and community health facilities.

3. Family health survey and a health information system. A Census Bureau mailing list was used as a sampling universe for a

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[36] Ibid., p. 7.

survey of health resources and health characteristics. The ADMATCH system was used with the DIME file to code vital records data by census tract subdivisions called block groups. Approximately 200 health indicators were derived for these block groups. A multivariate factor analysis was used to select key indicators.

4. Local data user interests and needs. An important finding of the study was that in order to make full use of data from the census for such uses as planning, health planning agencies should establish an organization or person with the responsibility of identifying the interests of local agencies.[37]

Although representatives of some 40 local agencies worked with the study, its main thrust was the development of health information for geographic areas within New Haven. Records matching was directed toward small-area use, subject to census confidentiality regulations that no specific person could be identified from tabulated census data.

Considering a broader scope of information and communication needs, an Intergovernmental Task Force on Information Systems was created by Congress in April, 1967. Members of the task force represented the Council of State Governments, the Advisory Commission on Intergovernmental Relations, the National Association of Counties, the National League of Cities and the U. S. Conference of Mayors, the International City Managers Association, and the U. S. Bureau of

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[37]U. S. Bureau of the Census, Census Use Study: Data Uses in Health Planning (Report No. 8, Washington, D.C., 1970), p. 19.

the Budget. The task force conducted a cooperative study, the purposes of which were to identify impediments to attaining an effective flow of information within and among governments, and recommend actions that could be taken at the federal, state, and local levels of government.[38]

The results of the study, published in 1968, noted the increasing demands by all levels of government for better information in order to plan, operate, and evaluate programs to meet public needs.[39] In response to more complex needs, cooperative arrangements among federal, state, and local governments are taking the form of joint action and sharing of resources; new relationships are evident among and within governments. Reliable information is required for concerted actions, but there are numerous impediments to such information flows, for example:[40]

1. It is often difficult to exchange information quickly and economically among governments; information is often unreliable and difficult to summarize and evaluate.

2. There is unnecessary duplication among systems dealing with similar kinds of information.

3. Unreasonable and conflicting demands for information are sometimes placed upon the lower levels of government.

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[38] The Dynamics of Information Flow, a report by the Intergovernmental Task Force on Information Systems, April, 1968. Foreword.

[39] Ibid., pp. 1-2.

[40] Ibid., p. 1.

4. State and local governments are frustrated in attempts to develop coordinated, unified systems.

5. Scarce resources are being wasted unnecessarily.

Among the factors which impede development of the necessary flows of information, the report cited:[41]

1. The lack of strong, central coordination at all levels of government over the development and operation of internal information systems. Federal and state agencies fail to consult with lower levels of government prior to imposing requirements for information. Standards are lacking for data elements and codes having broad usage in cooperative government programs.

2. Technical capabilities and skills are inadequate in some state governments and in most local governments.

3. Data processing equipment and related software used by governmental units are incompatible.

Following enactment of the Intergovernmental Cooperation Act of 1968 the Secretary of Housing and Urban Development (HUD) established an Urban Systems Advisory Council (USAC) with the concurrence of several other federal agencies. Nine agencies including HUD are represented on USAC: the Offices of Management and Budget, Economic Opportunity, and Civil Defense, and the Departments of Transportation, Labor, Commerce, Justice, and Health, Education, and Welfare. Objectives of the research program launched by USAC included the development, testing, evaluation, and documentation of urban information systems and subsystems prototypes.

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[41] Ibid.

At the invitation of USAC, an informal committee of representatives from the Pennsylvania Department of Community Afiairs, the State Planning Board, and the Governor's Office of Administration selected a group of Pennsylvania cities to apply for HUD funds to be used in the development of an urban information system. In addition to funding from HUD, technical assistance was offered by the Department of Community Affairs and computer time by the Bureau of Management Information Systems.[42]

Two cities were selected for total information systems and four cities (one in Pennsylvania) for partial systems on human resources development, physical and economic development, and public finance. Human resources development was defined to include eight areas for subsystems development: manpower, education, libraries, welfare, health, recreation, voter registration, and vital statistics. The components and applications of human resource development were

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[42]The interest of the Commonwealth of Pennsylvania in management information systems was evident in the creation of a Bureau of Management Information Systems (BMIS) in the Governor's Office of Administration during the 1960's. BMIS served as a central source of assistance on automated data processing (ADP) for offices with management applications. The bureau was assigned the responsibility for coordinating statistical information in the Pennsylvania state government. (Governor's Executive Directive No. 82, May 26, 1969.)

A second bureau in the Office of Administration, the Bureau of Systems Analysis (BSA), was involved in the establishment and guidance of information systems. Whereas the function of BMIS was to advise and recommend ADP equipment and services with a goal of an integrated, centralized computer operation for the state, the BSA advised on the design of managerial systems and analysis, including cost-benefit studies. The two bureaus were merged in 1971.

Component	Operation Application	Analytical Application
Manpower development	Increasing the employ-ability of citizens, manpower inventories	Manpower planning and program co-ordination
Manpower training	Occupational skill demand	Program evaluation
Manpower employment	Labor supply/labor demand	Program evaluation

In the initial state of the project designed to develop an urban area information system, St. Paul, Minnesota, the city selected to conduct the human resource project, identified considerations appropriate to determining the scope of the system.

1. Detect human problems in mental and physical health.

2. Detect educational and employment deficiencies in these people.

3. Provide a means for testing and evaluating health, education, and employment deficiencies.

4. Refer individuals to human resource agencies regarding new employment, education, and health services.

Conceptualization of a human resource development system for St. Paul which might provide the basis for an information system was not an easy task. It required the backgrounds and frames of reference of such project participants as computer experts, data engineers, social scientists, and law professors. The differing perspectives and goals among the participants led to a preliminary conclusion

that resolving the differences, within the scope of the project, might not be possible.[43]

Information Systems and the Manpower Administration

During the 1960's legislative bases for comprehensive manpower programs were enacted by Congress.[44] The Area Redevelopment Act, the Manpower Development and Training Act (MDTA), and the Economic Opportunity Act of 1964 provided the basis for new programs designed for the technologically unemployed, unemployed youth, school dropouts, the poor, and welfare recipients. These programs spurred new types of labor market information[45] and program management reporting systems.

The development of a modern management system that could be used as an instrument of change had begun early in the decade and included four elements:[46] an operating plan of service; an applicant-oriented reporting system; continuous monitoring of state and local operations; and an evaluation system to measure the results of service instead of levels of activity.

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[43]James E. Jernberg and Linda F. Irwin, "Problems in Conceptualization of a Human Resources Development System: The St. Paul Experience." Paper presented at the annual conference of the American Society of Planning Officials, New Orleans, March, 1971.

[44]Ruttenberg and Gutchess, op. cit., p. 5.

[45]The Manpower Development and Training Act of 1962, for example, required a comprehensive system of labor market information on a national, state, local or other appropriate basis including but not limited to information on impediments to development of employment potential, job opportunities, and skill requirements for a Job Bank and Job Match, labor supply in various skills, and occupational outlook.

[46]Ruttenberg and Gutchess, op. cit., p. 33.

As the need to make better use of available data and to improve the completeness and accuracy of reporting was recognized by the Manpower Administration, proposals for improving information through the use of common forms and definitions and the design of new data systems were circulated internally. The Office of Manpower Management Data Systems was established in August, 1968, and expanded in scope as a part of the Manpower Administration reorganization of March, 1969. Responsibilities of the office include manpower programs and supplementary systems used for collecting, processing, recording, and communicating manpower program data.[47]

By the end of the decade five major data processing systems were used by the Manpower Administration to process enrollee characteristics data:[48]

1. MARS includes enrollee characteristics and project status data for MDTA, WIN, and CEP programs. Although approximately 890,000 records were accumulated over an 18-month period, approximately 250,000 were unusable or invalid.

2. The Office of Economic Opportunity system was used to process Neighborhood Youth Corps, Operation Mainstream, and New Careers program data.

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[47]Executive Office of the President, Office of Management and Budget, Statistical Policy and Management Information Systems Division, Statistical Reporter (July, 1970, No. 71-1), p. 13.

[48]Enrollee Characteristics Data Systems, a report prepared by Macro Systems, Inc., for the Manpower Administration, September, 1970, pp. 7-8.

3. The NAB/JOBS system included the JOBS-Entry and JOBS-Upgrade programs.

4. The Mainstream system was developed by the Job Corps.

5. ESARS provides for the recording of all ES agency services provided to individuals. Mark sense input documents and summary data are forwarded to the national Manpower Administration office via magnetic tape for further processing.

Unlike the first four data processing systems, ESARS was designed for feedback of information to the local area level and for the integration of Job Bank data and monthly functional time distribution tabulations. In addition to summaries of activities and characteristics data, data on costs of specific functions in both time and dollars had been developed by the Pennsylvania Bureau of Employment Security during 1971. Such data could be used for important management functions, but how much should be distributed to the local area level and what management decisions based on the use of such data would be delegated to the local area level had not yet been decided by July, 1971.

Recent developments in manpower information systems described in the 1971 Manpower Report of the President include the testing of experimental designs in four states for computer-assisted systems to match workers and jobs, and pilot job information programs for disadvantaged persons in ten cities, including occupational outlook and job search information. The growing importance of computerized systems for matching men and jobs was recognized in the report through

the inclusion of an appendix on job matching and labor market information programs.

In the present structure of manpower programs ten types of specialized information systems with different objectives can be distinguished:

1. Environmental Indicator Systems--Systems of economic indicators include cost of living indexes and measures of consumer demand. Other environmental aspects having effects on manpower programs include the supply of housing, availability of transportation, and adequacy of utility services and health and educational facilities.

2. Labor Market Information Systems--A number of survey and census sources, and some administratively derived data, are combined into statistical series, primarily on population and employment, which are useful in assessing the supply and demand environment in which manpower functions. Unlike other systems, these systems, together with environmental indicator systems, are distributed to and used by employers and researchers as well as by manpower agencies for program planning.

3. Client Characteristics Systems--The MA 101 system is an example of a system designed primarily to summarize the characteristics of individuals enrolled in manpower training and development programs. Although copies of MA 101-104 forms are available locally, data are tabulated in Washington for program evaluation and other uses.

4. Client Services Systems--The Job Bank program is the best example of an automated client oriented system. The automation of other files for the diagnosis of manpower services needed by clientele

and the evaluation of career development and past manpower services would require a system of sharing among agencies and safeguards against improper uses of individual file information.

5. Client Accounting Systems--The unemployment insurance system requires an accounting record of employer and employee contributions and benefits.

6. Client Follow-up Systems--Follow-up surveys are required in order to evaluate the effectiveness of training and other manpower programs.

7. Activities Reporting Systems--ESARS is the best known automated activities reporting system. Information on client characteristics and statuses, as well as about services performed, is tabulated at both the state and federal levels for program management uses, including accountability.

8. Accounting Systems--Both the time in man-hours and the actual cost of specific manpower functions are tabulated monthly for Employment Security cost centers. When combined with ESARS services data for the same function, this information can be used for management decisions on resource allocation and evaluation as well as for program planning, budgeting, and accountability.

9. Personnel Systems--In order to administer the Civil Service and other personnel management operations, certain records about qualifications, experience, performance rating, and leave must be kept. This system, which can overlap the accounting system, is an important source of information on resource allocation. If inventories of present staff resources and estimates of anticipated available

additional staff are maintained, such information can be used for program planning.

10. Logistic Systems--Resources other than personnel, such as equipment and office and training space, must be accounted for and assessed in both evaluation and planning of programs.

In examining the variety of systems, it is important to distinguish between the client-focused information needs as described in systems 3 through 6 and the program management information, which flows indirectly from the same basic source documents. The type of information needed for optimum delivery of services to clients may require single, integrated records for the individual within the agency, with legal authority for its collection and use and with safeguards for protecting the release of information about individual clients. Information required for program management needs is generally based on aggregate data which in turn relate to the delivery of services but need not be for each individual. It is not likely that the legal reporting requirements or problems of confidentiality would be the same as those arising in delivery of services.

Of these ten types of specialized information systems related to manpower programs, all are based wholly or in part on administrative sources of data. The design of a LAMMIS must encompass appropriate parts of these systems.

In a research study conducted by the University of Michigan on labor market information, the gaps, inconsistencies, and limitations of data bases now available are being analyzed together with ways to make information from these data bases more readily available.

Thirteen different data bases have been identified, six of which would be typed, under the above classification, as labor market information systems.[49]

In recognition of the growing importance of economic and social statistics in policy formulation, the Office of Management and Budget has acted during the past two years to add more than 25 percent to the budget for principal statistical programs.[50] In response to the need to improve the organization of federal statistical activities, the four federal departments with major statistical components, including the Department of Labor, have been requested by the OMB to review their statistical activities. The model for proposed reorganization would include two offices in the department which would both report to the same official. An office of data analysis would centralize planning and analysis for general purpose statistics, be in charge of the construction of analytical statistical measures, make projections, build models, and conduct long-range analyses. A service-oriented data collection and processing center would centralize collection and processing of statistical data and would review informational requests. In deciding how best to obtain requested data, four possible alternatives would be

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[49]Malcolm S. Cohen, "Labor Market Information Project," Executive Office of the President, Office of Management and Budget, Statistical Policy and Management Information Systems Division, Statistical Reporter (July, 1971, No. 72-1), pp. 3-4. The other seven data bases would be classified as follows: environmental indicator systems--2, client characteristics systems--2, client services systems--1, client accounting systems--1, activities reporting systems--1.

[50]Executive Office of the President, Office of Management and Budget, Statistical Policy and Management Information Systems, Statistical Reporter (July, 1971, No. 72-1), p. 1.

from data already available, from adding to existing surveys, from conducting new surveys, and by contracting for surveys through outside sources.

The policy-making and program offices of the department would retain the present responsibilities of determining statistical and information program needs and their general specifications. The Office of Management and Budget would continue to coordinate and monitor statistical programs and activities.

Geographic Base of a Manpower Management Information

The spatial or geographic coordinates of information are a fundamental consideration in establishing an information system. A primary purpose of the New Haven Census Use Study was to develop a system of geocoding for census and local records data and to identify geographic areas within the city for analytic needs.

The geocoding experience of the St. Paul USAC study has revealed that each local agency has different subarea preferences: schools--attendance areas; welfare agencies--areas smaller than census tracts; federal agencies--areas of program concentration; and planning agencies--all types of areas.

The major manpower and related agencies in the Philadelphia metropolitan area do not have the same administrative subareas; most have different geographical boundaries. The Philadelphia District 1 Office of the Bureau of Employment Security includes local employment, MDT, and WIN offices in Philadelphia and Delaware counties and those in parts of two other counties. Public assistance in Pennsylvania is is administered through county boards of assistance. The CEI

program is for a specific part of North Philadelphia. School districts comprise single or combinations of municipalities and are further organized into regional and intermediate planning areas.

While political and administrative boundaries do not always determine the area within which residents are eligible for manpower services, such boundaries do affect the allocation of resources and the geographic detail of data which are collected.

An important influence in determining the limits of the area to be included within a local area manpower management information system is the Cooperative Area Manpower Planning System initiated by the Department of Labor in 1967 as a result of the proliferation of manpower programs. The objectives of CAMPS were better communication among agencies, improved linkages among programs, unified direction and coordination of separate programs, a forum for advice, and joint planning and programming.

Determination of geographic areas for the local CAMPS committees was left to the discretion of the state BES, although emphasis was placed upon the SMSA's. The Philadelphia CAMPS area comprises the eight-county Philadelphia SMSA.

Members of the Philadelphia CAMPS committee include BES local managers from satellite communities within the SMSA but outside District 1. In addition, the assistant district manager of District 2, which includes only a part of the Philadelphia SMSA, and the district superintendent of the New Jersey state employment service are members. Five federal agencies with regional jurisdictions and four state agencies, other than the BES, are

represented.[51] Thus, the interests and responsibilities of at least 11 members extend well beyond the limits of the SMSA.

A second group of organizations has interests which extend beyond the city limits of Philadelphia but fall within the SMSA. This group includes the Greater Philadelphia Chamber of Commerce, the Southeastern Pennsylvania Development Corporation, and the Human Resources Institute of the AFL-CIO.

City-oriented CAMPS members included the City Manpower Utilization Commission, the City Redevelopment Authority, the Fellowship Commission, the Urban League, the Philadelphia School District, the Crime Prevention Association, the Opportunities Industrialization Commission, and the Jewish Employment Vocational Services.

Interests within the city include Model Cities, CEP, and the South Philadelphia Development Corporation. Both Model Cities and CEP operate in parts of North Philadelphia with significant problems of poverty, underemployment, and unemployment.

Despite the variations in geographic focus of the different CAMPS members, some extending beyond the SMSA and some restricted to only part of the area, the concentration of both economic activity and manpower problems in the city of Philadelphia is common to all CAMPS participants. An estimated 56 percent of all non-form wage and salary workers in the eight-county SMSA are

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[51] The Manpower Administration and Bureau of Labor Statistics in the Department of Labor, the U. S. Department of Commerce, the U. S. Civil Service Commission, the Federal Reserve Bank of Philadelphia, the Pennsylvania Bureau of Vocational Rehabilitation, and the Pennsylvania Departments of Highways, Public Welfare, and Community Affairs.

employed in Philadelphia; percentages of target groups of disadvantaged persons are similar.[52] At the same time, commuting patterns within the SMSA, the migration of population to the suburbs, and the shifts in industry to the suburban counties within the SMSA are all arguments in favor of not restricting the "local area" for manpower services to only the central city of Philadelphia. Based on an analysis of 1960 commuting patterns to SMSA central cities, the Center for Urban Studies at the University of Chicago has recommended that labor markets be defined as all counties sending commuters to a given central county,[53] a proposal which would extend the Philadelphia labor market beyond its present SMSA boundaries.

While the SMSA approximates the same area to which labor market influences apply to Philadelphia and for which manpower programs are applicable, the use of counties does not produce necessary geographic detail for information required for local area program management. Although every manpower agency uses different administrative subareas, the adoption of a uniform system of geographic identifiers for client data would be a first step toward analyzing variations in the location of client groups within the city and counties and studying the feasibility of uniform and rationalized administrative subareas.

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[52]The Philadelphia SMSA Comprehensive Manpower Plan for Fiscal Year 1971, Part A, pp. 11, 75.

[53]U. S. Bureau of the Census, Metropolitan Area Definition: A Re-evaluation of Concept and Statistical Practice (Working Paper 28, Washington, D.C., 1968), p. 24.

Other Considerations Shaping a LAMMIS

In addition to the conceptual problems facing the development of an information system, there are important practical realities which cannot be ignored in systematizing manpower information and in organizing community agencies to share data. The complexity of the organization of manpower and related services and the problems which have plagued CAMPS cannot be ignored. Existing subsystems imposed by state and federal agencies with heavy demands on resources and little information feedback do not produce enthusiasm for still another system. Administrators fear shifts in program and organization and even "policing of the system" if too much information is supplied beyond agency and statutory requirements. The fear of improper or unethical use of individual client data or summary program or agency statistics raises a specter of invasion of privacy and excessive controls.

The very nature of manpower services produces the need for assembling comprehensive data and also creates organizational difficulties. Manpower services, as defined in this report, include primary and supportive services, financial assistance, and indirect services related to manpower development and employability. Present services are characterized by fragmented and overlapping programs administered by an increasing number of agencies. Organizations include offices for parts of cities, cities, counties, state regional districts, states, multi-state regions, and the federal government. This complexity of organization has produced confusion among persons in need of manpower services and has resulted in efforts by both the

state and federal governments to coordinate programs. One notable effort, CAMPS, has so far lacked the authority and organizational structure to insure adequate cooperative efforts for managing manpower services in a metropolitan area. Recent federal legislative proposals have advocated manpower program decategorization and decentralization, with states and cities receiving block funding and greater planning and program management responsibilities.

Regardless of what new legislation is passed, the need for increasing manpower services is not expected to diminish. The organization of manpower services at the local level is likely to continue to require coordination among local agencies. New programs and methods of delivering manpower services will be designed, and it is probable that most of the present manpower and related agencies will administer these programs along with possible new agencies.

Complexity of manpower services and their organization will continue to be a major influence in favor of an organized manpower information effort replacing the present structure of incomplete and only partially systematized data.

One of the greatest obstacles which must be overcome if a local area manpower management information system is to be created is the present welter of reporting systems. Although they require a major expenditure of resources, they often produce little information of value to local managers. Efforts to control this burden have yet to be effectively organized at either the state or local level. Coordination, reporting controls, and development at the federal level, such as by the Office of Management and Budget and

USAC, have been specialized and lack sufficient resources to focus on manpower information needed for program management in metropolitan areas. However, the interrelated nature of manpower planning with other social and economic programs in the community will eventually produce pressures for the interchange of information among health, education, welfare, and manpower area information systems.

Some of the present manpower information systems such as ESARS, Job Bank, and the time distribution cost accounting system of the BES hold great promise and can be extended to other manpower agencies, while outmoded systems are phased out. Because the capacity of individual agencies to adopt new information systems varies considerably, technical assistance, sharing of data processing equipment, and limited funding will most likely be features of a consolidated system. Two powerful incentives in favor of a LAMMIS will be the need for help in responding to mandated reporting requirements and the prohibitive expense, for a small agency, of acquiring the necessary ADP equipment and technical advice. Even though federal and local manpower information needs do not coincide, supplying information to federal agencies is a potential basis for federal funding if federal monies are not directly involved in the funding of a LAMMIS.

One of the most compelling arguments in favor of a LAMMIS is the need to standardize definitions, concepts, and classifications used in manpower reporting programs and state and federal budgets. Unlike many proposed information systems which offer few returns to the local offices supplying the data and whose purposes may be

vague or general, the specific local area management focus of a LAMMIS and the limitation of the system to administratively derived data should enhance its acceptability to local area managers.

Assuming the successful organization and funding of a LAMMIS, what issues, based on the probable attitudes of the system's participants, are likely to influence its development?

New information intended to assist local management may suggest the need for a reorganization of management. Since manpower managerial functions have been concentrated at the state and federal levels, a shift to local decision-making associated with decentralized programs should be favorably received. The danger of not providing local area controls is already anticipated in the ESARS distribution of cost data to local ES offices.

Better data for accountability and evaluation may produce a fear of shifts in agency programs. The realization that manpower needs outweigh available resources will counteract this fear to some extent. Comprehensive comparative data on programs could produce competitive rivalry among programs and permit resource allocation in a more objective manner.

A technique for promoting common interests and increasing interagency cooperation in the information system is to form a board of participating agencies, which might help to develop a sympathetic understanding of the system's objectives and support the authority needed to shape crucial aspects of the information system's development and output. In the St. Paul manpower information system sponsored by USAC, a joint information use board with 15 representatives from the community agencies and the project staff

meets weekly to help shape the project. Component elements of the project include a data base management plan, a data standardization plan, a data release and confidentiality plan, and a data sharing plan.

Some indication of the types of resistance to a centralized information system is revealed in a recent survey of 28 voluntary and public social service agencies in one of the nation's larger metropolitan areas.[54] Three forms of community-wide information systems were envisaged: a directory of information stored in various agencies for use by authorized persons; a central registry or exchange identifying patients and clients about whom additional information could be obtained from the organizations serving them; and an archive for abstracts of health, welfare, and social agency records on persons served.

When the agencies were asked about their willingness to contribute various types of data to a community-wide information system, the following percentages of favorable responses were recorded:

Type of information	Percentage in favor
Abstracts of patients and client records	24
Individual data on employees	34
Budgetary and operational data on programs and services	57
Summary statistics on these items	62

[54] John H. Noble, Jr., and Henry Wechsler, "Obstacles to Establishing Community-wide Information Systems in Health and Welfare," Welfare in Review (vol. VIII, no. 8, 1970).

Many administrators were unwilling to share even summary data without the approval of their boards of trustees. They were concerned about problems of both ethics and confidentiality and were not convinced of benefits they would gain through data sharing. Agencies subject to recommendations of community planning councils and competing for scarce resources are understandably uneasy about the images they project through summary statistics.[55] The issues of confidentiality of data for individuals and unwarranted invasion of privacy have become prominent in recent years. Because of a strong tradition in the federal government of not disclosing data for individual business establishments, the confidentiality issue has concentrated on records for individuals. Most program management needs do not require data for individuals. For those managerial functions, such as program evaluation, which do require records matching for follow-up and for investigating the relationships of manpower services to individual benefits, several types of safeguards can be used. Among them are computer programs which ensure that individual files to be matched cannot be "outputted" and that the core memory is erased.[56]

In the use of data from 13 different manpower data bases for developing labor market information for SMSA's, the University of Michigan project staff[57] has entered into a series of complex

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[55] Ibid. p. 24.

[56] Charles L. Schultze, "A Data System for Measuring and Analyzing Public Programs," Monthly Labor Review (March, 1970), pp. 13-15.

[57] Cohen, op. cit., p. 3.

agreements to protect the confidentiality of individual survey reports while at the same time permitting access to statistical information stored in the university computer at a disaggregate level. Three cases are distinguished:

1. Cases in which only the original collection agency has access to data which might identify individuals or firms.

2. Cases in which only cross tabulations are made available to project personnel.

3. Cases in which all characteristics which would identify firms or individuals are removed from the record before they are sent to the project.

Even such assurances are unlikely to satisfy the concerns of legislators or administrators. Regardless of whether the information system is an "intelligence system" or one based on aggregated data, the underlying fear of how the data could be improperly used is strong and pervasive. The facts that many programs presently share data, for the benefit of the client or society, and that some programs cannot be administered without information sharing are ignored.[58]

To what extent would an information system organizationaly separated from any operating program be able to assume responsibility

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[58]For example, the Medicaid amendments to the Social Security Act requiring the sharing of confidential records between state welfare, health, and vocational rehabilitation departments and the police-court-probation complex of data sharing. For a fuller discussion, see Albert Mindlin, "Confidentiality and Local Data Systems," in the U. S. Bureau of the Census, BE 40, No. 4, Papers Presented at the Conference on Small Area Statistics, American Statistical Association, Washington, D.C., December 27, 1967, and Related Papers (Washington, D.C.: U. S. Government Printing Office, 1968), pp. 15-24.

for developing, maintaining, and using integrated data records? Some safeguards suggested by the chief statistician of the government of the District of Columbia in developing such a system include:[59]

1. The staff of the information system should have no operating responsibilities and should not attempt to standardize records at their source.

2. There should be no feedback of confidential information for individuals to source agencies.

3. Certain items of information should be out-of-scope.

4. Files should be periodically purged for confidential items that are out of date (e.g., more than five years old).

5. Individuals should have a right to see their records and correct them.

6. Laws or regulations should protect the system from judicial subpoena in order to prevent data being used for intelligence purposes.

Balanced against the fear of invading privacy is the concern of at least one local area official that reporting systems "lose track of humanity," for example, when an agency reports referrals and the results of referrals in the same statistical table without referring to the same individuals. Another official cites the reporting of the same people and activities twice in the case of a program conducted by two agencies but reported through two

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[59] Ibid.

different channels. Criticisms about the accuracy and relevancy of data are germane regardless of the type of reporting or information system. Such problems will be easier to detect and remedy in a rationalized and integrated information system designed to serve specific functions than in a fragmented reporting system whose data uses are imperfectly known.

There are, of course, limitations on what can be measured. Qualitative as well as quantitative information can be incorporated in a LAMMIS. The assumptions underlying the LAMMIS are (1) that information is needed to reach manpower management decisions for a local area, (2) that such information can be specified, and (3) that a feasible system can be designed for assembling and processing the necessary information. Before the decision-making process can work effectively, an additional ingredient is needed--managers with the capacity and motivation to use the information.

There are apt to be important limitations, such as inadequate program authority and finances, in implementing a local area manpower information system. Assuming adequate authority and resources for a LAMMIS are feasible, there should be a minimum of disruption of operating programs and planned incremental system development.

But there is another aspect to consider--the increasing importance of local area manpower management and the urgency of manpower problems which require information unthought of a decade ago. Advanced data processing technology makes new kinds of tabulations possible. The combination of urgent need for information and the technology to develop such data call for bold,

imaginative approaches to manpower information systems which will anticipate new needs and challenge management to new responsibilities. Information is knowledge directed to purposeful, comprehensive ends. People with the responsibility for collecting, processing, and disseminating information should look ahead to possible future developments in delivery of manpower services and plan research which will stimulate management to shift goals and program objectives in creative ways, improving both the methods and the quality of public services.

CHAPTER V

ALTERNATIVE MODELS OF INFORMATION SYSTEMS

When considering information systems the first thought of many people is of a monolithic, fully centralized computer operation. The capability of computerized systems to record, store, manipulate, and deliver quantities of information might tempt some to structure a computerized data bank including all conceivable data elements. Such a conception of the Total Automated Centralized Records System (TACRS) is somewhat utopian despite the presently available technology for its development.

The Total Automated Centralized Records System has many theoretical advantages. Making the local area data collection and processing a singular function has decided advantages in meeting management problems: it guarantees standardization and compatability of data inputs and assures maximum economic use of computer hardware and software. However, considering the sensitivity of the kind of information it would handle, and the environment in which it would function, TACRS may not be a feasible model. It is unlikely that the various management centers functioning in traditionally decentralized frameworks would willingly relinquish any significant part of their prerogatives to central control. Where centralized systems have emerged, they have usually been initiated by edict from top central management and limited to certain functional areas. Clearly in the Philadelphia area there

is no person or group charged with the authority over all manpower programs.

An alternative to the TACRS concept is the Merged Individual File System (MIFS), which attempts to function within the constraints of the environment. MIFS would require each agency to maintain its own data processing unit with compatible data specifications. The individual agency's system would be an operational control module whose files would be linked to form the data bank for a management control module. Such a system can satisfy all the program management needs that TACRS can fulfill. Realistically, however, even though MIFS may represent a useful goal toward which current planning should be oriented, it cannot be implemented immediately. Advocating a single-stage, completely integrated systems goal is a simplistic approach toward total management information systems. Recognition of the difficulties in implementing MIFS leads to a recommended strategy which will be considered in detail in the final chapter of this report.

Before proceeding with a discussion of alternative management information systems, the constraints set forth by the limited objectives of this study must be taken into account. The scope of the proposed information system is limited to information derived from the normal recurring operations of manpower and manpower related programs. If it is restricted to internal operational data, no proposed system can truly be considered a total management information system, since by conventional definition such a system includes both operational and external environmental data. Hence, the system

discussed below should be viewed as a subsystem of a complete management information system.[60] A second limitation to the objectives of this survey is that the proposed system would be restricted to local area program management. Thus, each suggested alternative and its informational outputs must be evaluated on the basis of its value to Philadelphia district manpower managers, not state administrative officials in Harrisburg or federal officials in the regional or national office. Moreover, there is no attempt to consider the direct information needs for delivery of service to clients, since that is beyond the scope and purpose of this project. It is realized, of course, that the product of good program management information is ultimately better service to clients.

Current Structure of Information Flows

It may be useful at this point to examine briefly the framework of the current structure of information flow in the Philadelphia area. The status quo must be taken into full account in any decision relating to potential information systems. In order to judge whether any proposed information system represents some improvement over the existing situation, it is necessary to know the character of the current flows of information. Although these flows are referred to as the current system it is inaccurate to regard them as a management information system. Local area management information is currently a fragmented hodgepodge of individual flows of information developed

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[60]This should not, however, belie the importance of the proposed information system models. The vital importance of operational data for program management has been noted in Chapter III.

by individual agencies with varying degrees of formalization and organizational structure; little attention is given to coordinated local area manpower program planning.[61] Nevertheless, the basis for a system does exist.

In appraising the current information flows many critical weaknesses are obvious. Some result directly from the fact that there does not exist an area program manager or any effective comprehensive area manpower planning.[62] Other weaknesses derive from poor data management procedures. The absence of any coordinating authority is mirrored by the lack of data standardization and compatability among agencies, the sparsity of interagency information exchange, and the lack of emphasis in data collection and reporting for satisfying local manpower program management needs rather than state or federal needs.

Unreliable data and unused information are the by-products of poor data management. Even good quantitative management information (for example, ESARS output) is seldom used by local managers. It is necessary, therefore, along with introducing useful aggregated management data, to train managers in the interpretation of such data and their implications for program management. Current problems with limited reliability of data can be traced in part to failure of state and federal administrators to hold local offices accountable for errors in data transmission. The ESARS forms are an exception. The ESARS experience clearly indicates that accountability is a necessity for

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[61] This fragmentation is largely the by-product of the categorical nature of the manpower programs described in Chapter II.

[62] CAMPS, theoretically equipped for this, has no real authority and no coordinating manpower information..

accurate data collection. Moreover, an extremely questionable practice is inherent in the aggregation and reporting processes in the nonelectronic systems. Agencies are responsible for tabulating and reporting information upon which they will be evaluated. Traditional sound management practice would require that this information be aggregated and reported by an outside source or that strict auditing procedures be imposed upon the reports. Neither of these practices exists presently.

The federal and state reporting requirements to which the manpower offices are subject dominate all information flows within and among these offices. Even the "shadow" information systems--those informal information flows directed toward local management needs--are affected in two major ways by the requirements of these upper levels of government. In addition to (1) shaping and limiting the shadow information system because of diseconomies in collecting other data, the federal and state reporting requirements also (2) contribute to the fragmentation of effort in the manpower field. Individual offices gather data, store them, and use them to prepare their own reports. There is little interagency exchange of data, and almost no attention is given to the utilization of such data as an aid in managing manpower activities on an area basis.

Two distinct flows of information can be classified. The internal information flow within any one office supports that office's delivery of services and selective administrative needs. The external information flow is almost completely accounted for by the requirements of the federal and state governments. These requirements have been established primarily to meet federal and/or state statutory, budgetary,

and administrative needs. The two systems are not mutually exclusive and, indeed, are to some extent reinforcing. Unfortunately, the external requirements dominate the entire system. This emphasis on generating reports for the federal and state governments has led conscientious employees to develop informal and makeshift information systems to assist them in delivering services to clients.

Basic Data Collection Process. A wealth of operational data is available in the source documents used by the manpower and manpower related agencies in the Philadelphia area. In general, the data needed for managing the various programs at the area level are already being collected, but they are seldom used for this purpose. This reflects a concentration of management functions at higher rather than local levels. However, even if there were greater management responsibility, the data currently being collected would be of little use in their present form. This is because (1) useful data are not accessible, (2) standardization of data elements among the agencies is slight, and (3) recording of the original data results in a high rate of inaccuracy because standards of accuracy vary considerably among agencies.

Although information valuable to both local area management and the individual agency is collected, it is never processed; it remains buried and inaccessible in personal desk files or in the files of individual agencies. There are two major reasons why such information is not processed and made available to higher levels of management: first, the budgets do not provide the facilities and staffs necessary to process the data into a form usable to management.

Second, many managers fail to recognize the full informational value such data could have in the decision-making process.

While most agencies collect similar data elements, wide differences in definitions and data formats exist. This precludes both the aggregation of information into a more useful form and more discriminating comparative analyses. Where the control fields are differently specified and a basis of comparison cannot even be constructed, no meaningful interface is possible. Most manpower and manpower related agencies collect the data element "age of client"; however, some record it by a code corresponding to classes. The class boundaries are, unfortunately, not the same among agencies. Also, the boundaries of one agency will fall within the classification interval of another agency's classification scheme and vice versa, precluding even a one-way aggregation. This lack of compatible data elements in the source documents prevents development of an effective local area manpower management information system. If there is not a common base at the source document level, it is impossible to produce effective, coordinated information.

The extent of inaccurate data being collected at the local level was documented in a recent study which reported that two-thirds of all manpower administration source documents (a major percentage of local area source documents) contained errors.[63] This high rate tends to be the result of three factors: (1) poor data management practices, (2) inadequate budgets for statistical

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[63] Enrollee Characteristics Data Systems, op. cit.

personnel, and (3) lack of incentive for proper data collection. The last, and possibly most important, factor stems from the fact that most data collection is primariy for external reporting, that is, to meet requirements established by the federal and/or state governments. Because the data collection is designed for the needs of state and federal authorities, local office personnel often view it as "irrelevant" at best, and as a hindrance at worst. Moreover, with the exception of ESARS forms, there is no local office accountability for errors in data transmission. The ESARS experience has indicated that accountability is necessary to accurate data collection.

Intra-agency Information Flows. Once the data have been recorded on a source document, their flow within an agency depends upon whether the agency has a computerized system. Figure 6 presents a schematic of the flow for an agency without a computer; Figure 7 presents the flows for a computerized system. Both schematics are general enough to apply to any agency (since details of processing, etc. are not shown). There is, however, no single agency which conforms to either schematic precisely. In many cases, program management reports are not actually generated; and, even where a computer exists, manual files and processing interact with the computerized portion of the information flow. Nevertheless, the dichotomy is useful for expository discussion.

Almost all of the source documents are forms developed by officials in Washington or Harrisburg as part of their reporting requirements. For example, in the CEP, WIN, Neighborhood Youth Corps, and Urban League programs, the basic source documents are the MA and R forms mandated by the Office of Manpower Management

Figure 6. LEVELS OF INFORMATION PROCESSING
NON-COMPUTER BANK

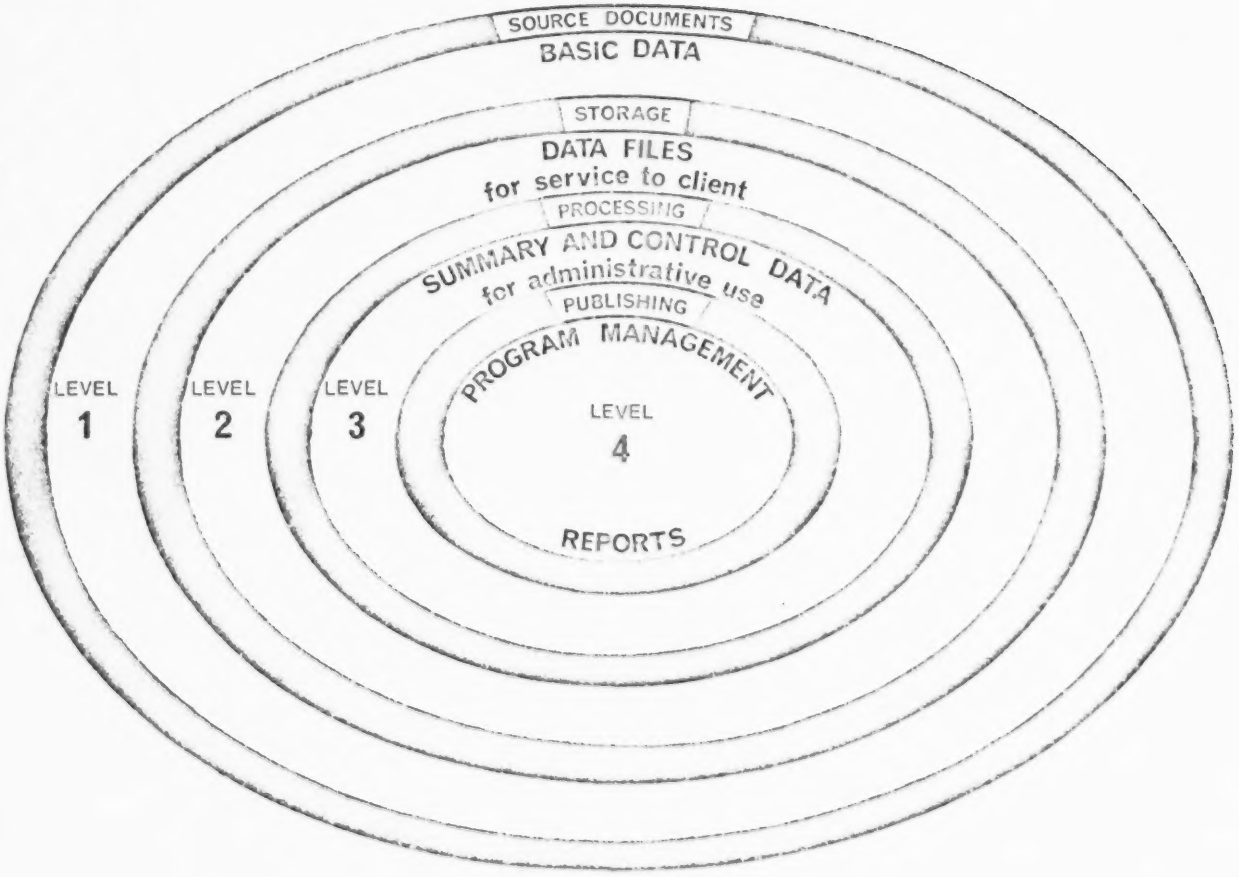
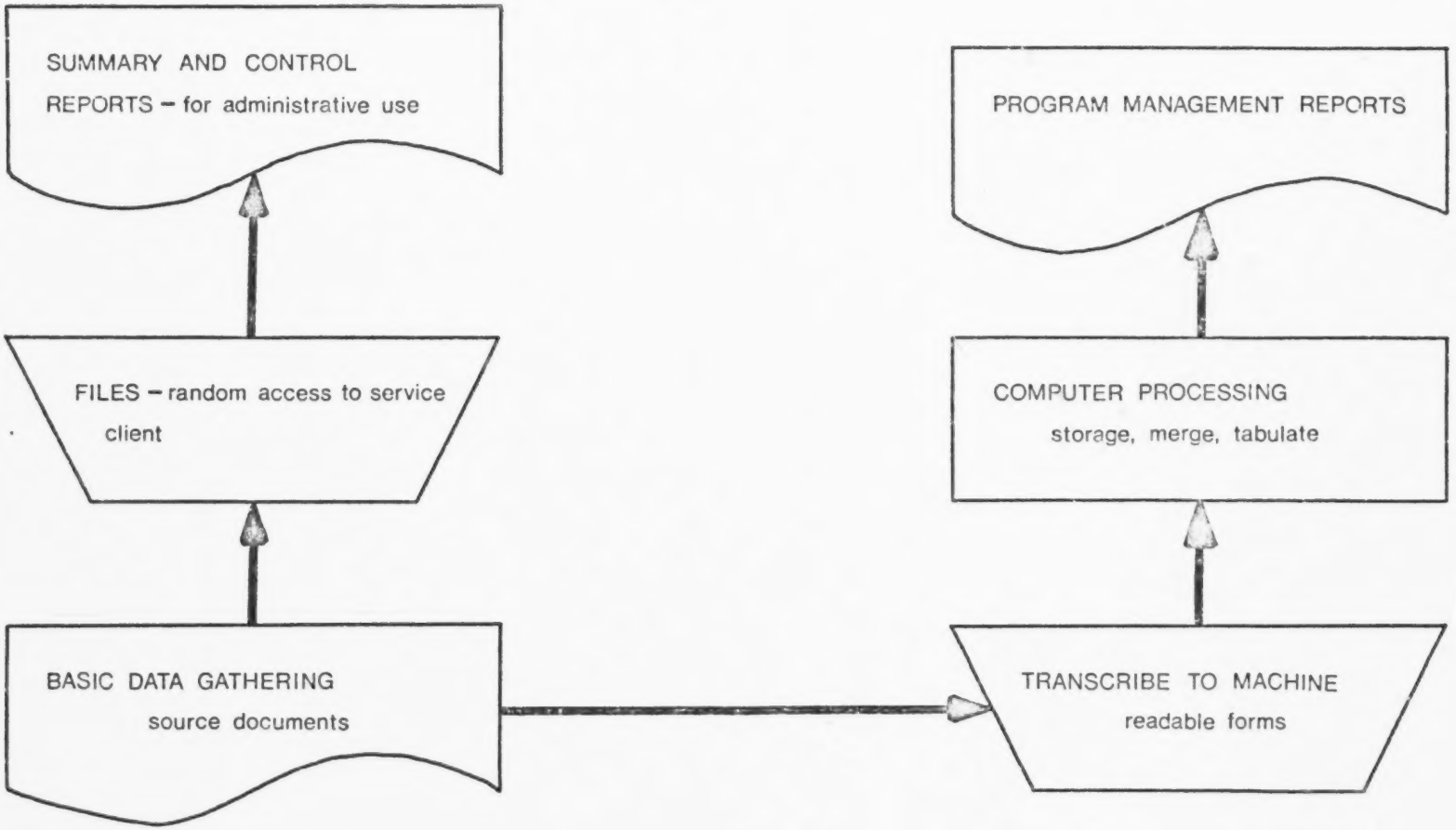


Figure 7. LEVELS OF INFORMATION PROCESSING
COMPUTERIZED DATA BANK



Data Systems (OMMDS). (A copy of every MA source document is forwarded to OMMDS.) None of the original source documents is machine-readable, with the exception of certain Philadelphia public school forms and Job Bank forms. Nevertheless, the manner in which any of the local agencies uses these documents depends upon whether the agency relies on electronic data processing support from the state or federal government.

In the nonelectronic supported system the filing of the source documents, manual copying, and compilation of the information from the source documents create all additional forms. A copy of nearly every source document is filed, with the actual filing system varying with agencies. Some agencies create files for each type of document; some create duplicate merged master files for clients--one which accompanies the client, and one which remains in the central record unit. Some keep both a merged file and separate files for each type of document.

Most files are sequenced alphabetically, but there are some which are grouped and indexed according to such factors as active status, inactive status, sex, veteran, nonveteran, etc. In general, the nature of the file structure controls aggregation and simple cross tabulations for those data elements which are part of the normally recurring process of the agency. It would, however, be a difficult task to search these same files and aggregate data elements which are not part of the normal agency filing structures.

The summarization of data collected is accomplished for one of two main purposes: control of operations or service to clients. The data summaries are easily classified under six major headings;

the first four deal with operational control and the last two are service-oriented reports. Control data are aggregated according to their significance for financing, organizing, and staffing. Reports on employability development and job entry or other completion of services deal primarily with service to the client.

Although the highest level of information aggregation is that intended for program management, it is this level which is typically most neglected. In most manpower agencies the only information processed at this level is that which is mandated by federal and state reporting requirements. Only CEP currently produces a nonfederal or state program management report. Referred to as the "one-page wonder," it is a single-page summary of various aspects of program performance which was developed by a consulting firm to satisfy the management needs of the agency. The summary page depicts accomplishments and objectives in a way which facilitates evaluation. Except for this report, however, federal and state requirements govern the report development.

This dependence on federal and state reporting forms is unfortunate since they do not satisfy local area manpower management needs; nor were they meant to. The reason for reliance on these forms seems to be twofold. One, due to lack of budget, staff, and computer capabilities, only limited data can be processed and hence only reports mandated from higher authority levels are produced. Second, there is a lack of local managerial knowledge in quantitative decision-making. Modern quantitative techniques of management are virtually nonexistent at the local level, where managers are only

beginning to recognize the need for and value of properly aggregated management data.

The above-mentioned nonelectronic systems clearly predominate in the Philadelphia area. BES and the Philadelphia school district are the only local manpower agencies which currently use automated data processing.

In ADP systems, after the basic data are recorded on source documents, selected data elements are transcribed onto optical mark reader (OMR) forms which are machine-readable. The data elements transcribed are those deemed useful for program management. At this juncture the original source documents and the OMR forms create two parallel subsystems. The former serve as the data base for the delivery of service; the latter provide the data base for a management information system. The delivery of services subsystem is the same as that of the nonelectronic system.

The OMR forms are sent daily to the computer facility by either mail (ESARS) or messenger (school board). In both situations the computer facilities are divorced from the local operating office, with the ESARS computer facilities located in Harrisburg and the school board's at its city headquarters. The machine-readable forms are then read into the computer, following which the various forms are sorted on the basis of client identification (i.e., Social Security number or pupil I.D.) and stored on tape indexed by individual client identifiers.

The next and highest level of information processing is the weekly and monthly sorting and aggregation necessary to output a wide variety of tabulations and cross-tabulations useful for program

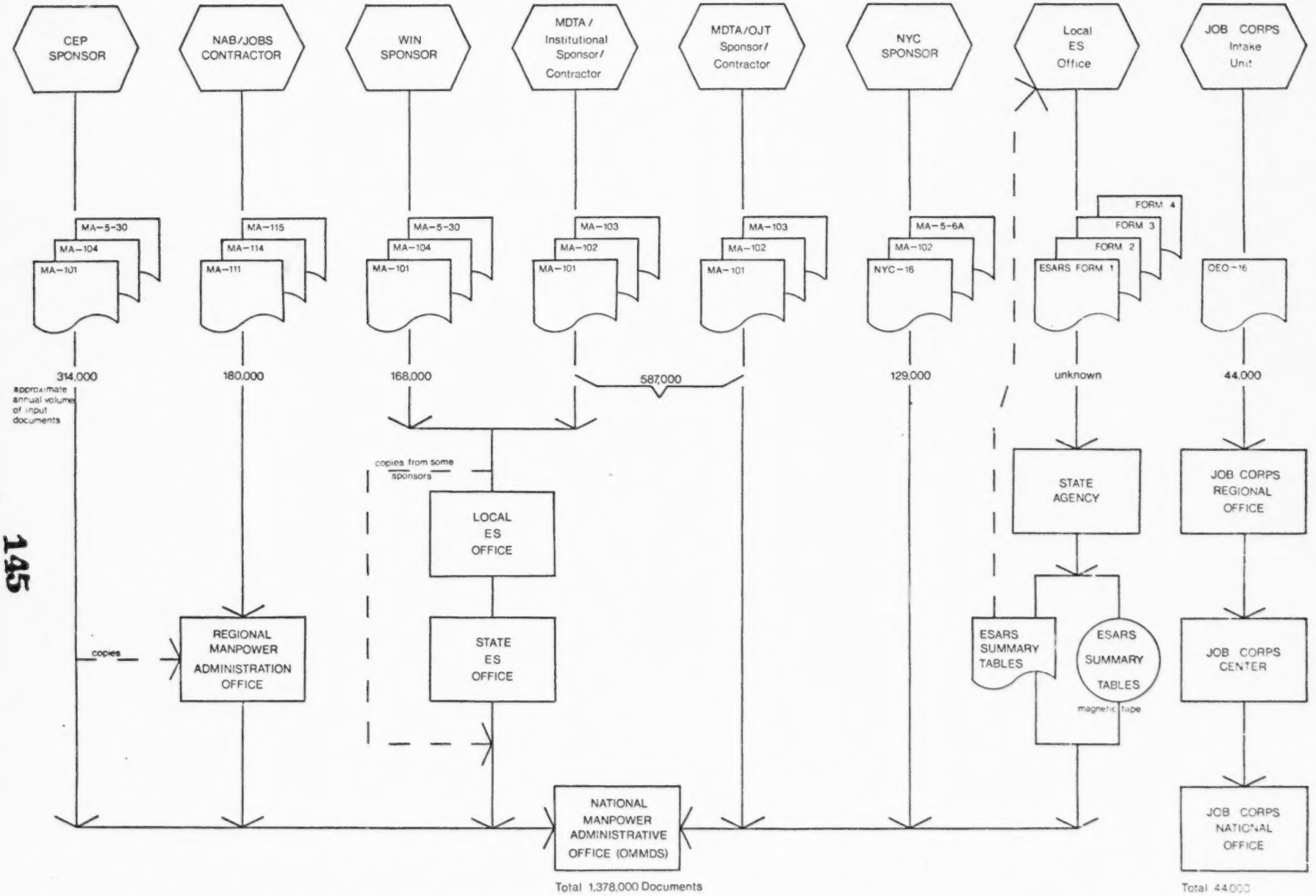
management. This program management information output is distributed first at the level at which the computer facilities are located (state or headquarters) and then locally. The output from these systems currently is restricted to program management use. Local agencies complain that there is too much delay in information feedback and, more important, that output is geared to state and federal management rather than local office use.

The only exception to the above structure is the Job Bank, where the information outputs are daily job vacancy printouts for local office use in the placement function. In this situation the computer acts as a mechanized data file for job vacancies and not as the producer of management information reports. There are undertakings to match the Job Bank files with the ESARS files to create a job match system. Such a procedure would expand the computerized data bank structure to bridge the parallel computerized information subsystems. The introduction of computers into the delivery of services would be a major improvement in information processing for many other agency situations.

In Appendix B the existing electronic system functioning at a local BES office and the nonelectronic CEP system are described for illustrative purposes.

Interagency Information Flows. With few exceptions, the flow of data externally from agencies to other agencies is almost totally one-way, i.e., to the state and federal levels. This external flow for manpower agencies is shown in Figure 8, in which certain important aspects of the information flow become evident:

Figure 8. FLOW OF CHARACTERISTICS DOCUMENTS — MAJOR PROGRAMS (Manpower Administration Dept. of Labor)



Source: Enrollee Characteristics and Data Systems (Macro Systems, Inc., 1970)

1. The external flows of information consist almost exclusively of mandated federal and state reporting requirements.

2. The main thrust of the information flow is to the federal level, the secondary thrust to the state level.

3. The flow of information is almost entirely in one direction, from the local office to federal offices.

4. The regional Manpower Administration office does not receive comprehensive area manpower information.

5. The merger of agency information is attempted (with questionable success) only at the federal level.

There is little resemblance between the existing external flows of manpower information and a local area manpower management information system. Comprehensive area manpower management data currently are derived from operating records. However, due to the lack of standardization of data collection, definition, and tabulation, management summary figures from different agencies are incompatible. Additionally, since only agency summary figures are available at the regional level, the problem of double counting exists. This problem may be acute for data dealing with types of services rendered (activity reports) and with individuals served (client and employer characteristics). For budgeting and staff information the problem is irrelevant. Simply to combine the number of counseling cases at CEP, BES, and WIN could be more misleading than informative. The implication of reporting 1,000 counseling interviews for persons aged 45-55 in any one month is quite different for manpower program planning when that total represents 1,000 different individuals, or only 200 individuals who have had multiple counseling interviews with various manpower agencies.

Moreover, on an individual agency level, with the exception of a limited exchange between county boards of assistance and WIN, there is no formal, regularly recurring interchange of information. There is, however, some informal exchange of both mandated reporting forms and specific information useful to local area management. An example of the latter type of exchange would be making available figures on public school dropouts to BES and on number of welfare recipients deemed employable to WIN. These interchanges hinge on personal contacts and relationships rather than formal interagency arrangements. With the exception of the flow from WIN to county boards of assistance, the interchange of federal and state reporting forms likewise results from personal arrangements, when it exists at all.

Total Automated Centralized Records

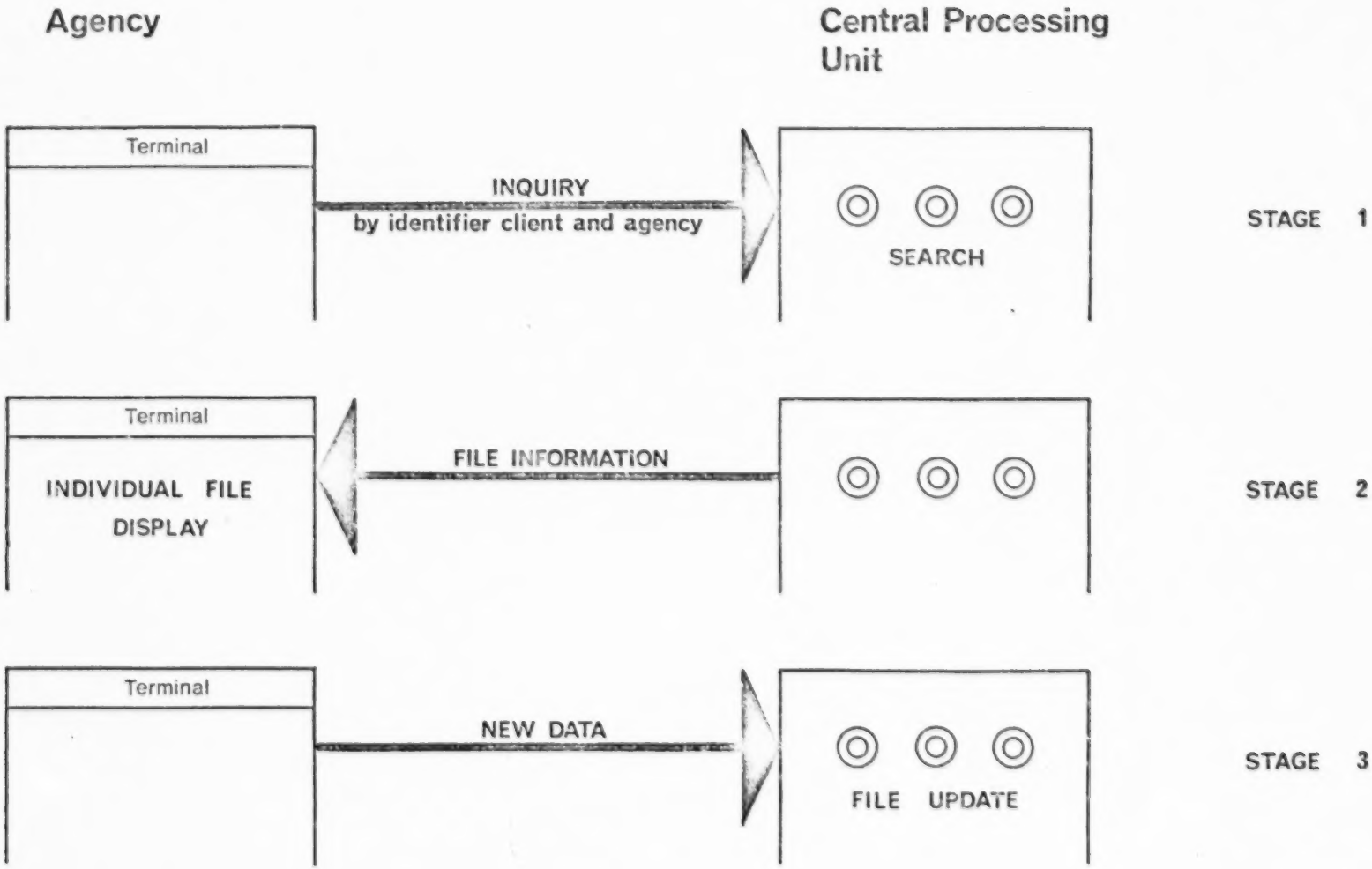
At the heart of the Total Automated Centralized Records System is the establishment of a centralized computerized data processing system, often referred to as a central computerized data bank. All information collected by participating agencies which can be coded for computer usage would be stored in a central computer file which would function as a common records unit for all agencies. The basic data function of the individual agencies would be to collect the raw data and transmit them to this unit.

At this point, the distinction between a central processing unit and a management information system should be clearly drawn. A central processing unit is not a management information system, but a facility for mechanized storage of all machine-readable information generated by the participating agencies. The essence of such a system

is comprehensiveness. A management information system, on the other hand, comprises the processing and analysis of data relevant to management decision-making. The key to developing a good management information system is selectivity rather than comprehensiveness. It is important to distinguish between the flows of information from the central processing unit which pertain to program management and administrative control, and those which are relevant to rendering service to a client. TACRS would provide information for efficiency delivery of services directly to clients and for administrative control. The program management information flows would represent only a subsystem of the information flow and could be considered an important by-product of such a system.

Basic Design of TACRS. The central processing of TACRS would clearly require the storage, maintenance, and interrogation of a vast number of files. More important, unlike the case with ESARS, since service to the client would be desired, quick random access to the central files would be required. This type of basic system is generally regarded as a real-time system. Numerous terminals connected to the central processing unit would be located in each agency. The computer would then respond to inputs from the terminals arriving at random times, usually by rapidly sending outputs back to the terminal or by updating the file. The basic operation of the system is outlined in Figure 9. The functioning would be as follows: When a client or establishment contacted an agency and data were either gathered or desired, the agency would access the central file by means of a

Figure 9. BASIC INFORMATION FLOW FOR CLIENT SERVICE



common client identifier, such as Social Security number.[64] In addition to the client identifier, an agency identifier would be entered via terminal to the central computer. The computer would search the files, retrieve the commonly shared data and that set of data unique to the agency, and transmit them via terminal to the agency. The final step in the process would be for the agency to add, correct, or update any information and transmit it instantaneously via the terminal to the central computer, where the central file would be updated. This procedure would promote current and correction information in the files at all times.

Centralization of files having a common data base and rapid random access to the files eliminates a great amount of duplicate data collection and reduces agency paperwork. As a result, it frees more staff time to service the client directly and reduces alienation of the client, who often feels dehumanized by constant duplication of data requests. However, these are advantages for operational functions not management.

The main functional question with the above process is whether the central processing unit operates fast enough to respond adequately to messages arriving continuously from the numerous terminals. This throughout speed is largely a function of the speed of the central processing unit, the file structure, the complexity of the software, and the access time to peripheral units. Moreover, since inputs enter at random the system may function satisfactorily at normal loads but be unable to cope with peak loads. A major study

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[64]The problem of finding a usable common identifier is an extremely difficult one. The magnitude of this problem is cited in Levine and Norton, op. cit.

of each agency's frequency distribution of inputs and storage requirements, as well as of available hardware and software, would have to be undertaken before this question could be resolved. However, the throughout speed should not be a problem due to the small total volume of inquiries relative to the immense speed and capacity of the latest computer equipment.

Similar to ESARS, TACRS requires that the data transmitted to the central processing unit be based on individuals or establishments serviced. This is not only essential for an effective management information system but also is an absolute necessity for information flows to render service to clients. The data inputs would be comprehensive since TACRS acts as the central record unit. For reasons of confidentiality, the data inputs from an individual agency will be divided into two mutually exclusive sets. The first set comprises those data elements for individual clients or establishments which are confidential and thus not available to other agencies. The second set of data would consist of those elements shared by agencies.

For the latter set of data elements, common formats for data collection must be established among participating agencies. This does not require, however, that each agency aggregate data uniformly or even use common definitions when they apply to a classification of a continuous variable such as age or earnings. In the first instance all that must be agreed upon is the collection of data at the level of the least common denominator. For example, education level would be stored on the basis of actual number of years of schooling completed. It would thus be possible for Agency A to aggregate its

data cells by under 7, 7-9, 10-12, and over 12 years and for Agency B to aggregate its data cells by under 7, 7-8, 9, 10-11, 12, 13-15, 16, and over 16 years.

Clearly, if data elements are stored in basic units, agencies can process data with maximum flexibility to meet their needs. Similarly, referring to the above instance, if Agency A defines youth as under 21 and Agency B defines youth as under 16, summary totals for both agencies can be retrieved so long as age of the individual is stored by date of birth. However, where definitions are based on qualitative factors such as "disadvantaged" and "job ready," agreement upon common definitions is a necessity. This need does not exist for those data elements which are restricted to internal agency use and are not transmitted to other agencies.

As a final note, care must be taken in specifying data formats so that information decay is minimized. For example, it is inefficient to collect age by "age at last birthday" rather than date of birth since the former will decay while the latter will not. Information decay of the central files is a serious problem. Certain data obviously will tend to become obsolete. Thus it is necessary to introduce a code to signify the last date the individual file was revised. This is important for program management information flows.

The outputs from TACRS would be voluminous and varied. In addition to the on-line information for client service, off-line aggregation of data for program management and official reporting would constantly take place. First, it would be the function of TACRS to fulfill all mandated federal and state reporting requirements. Since all files are maintained centrally and not at the individual

agencies, the reporting function responsibility applicable to each agency would have to be assumed by TACRS (a sound management practice). Thus, TACRS would have to be coordinated with state and federal information systems.

Two classes of project management data output would flow from TACRS: regular recurring summary totals and special request tabulations. The regularly recurring outputs could be daily, weekly, or monthly totals, depending upon frequency needs. It would be advantageous to standardize the various agency informational needs with respect to time and frequency. Various formats for information could be processed. Moreover, summary figures could be aggregated by

1. individual agency--for the purpose of individual agency analysis and comparative agency analysis.

2. area--either for the total area or for subgeographic divisions, if some sort of geocoding of the files were used. Such figures would be free of double counting since they would be processed from the central coordinated file.

3. cross-tabulations of interagency data for common categories for clients subject to interagency programs. These would trace the flow of participants through the manpower services delivery system and determine possible duplication of services rendered.

In addition to program management records, formulated primarily from retrievable and aggregated data, reports incorporating such sophisticated analyses as dynamic programming and scheduling techniques; program control and monitoring devices such as the critical path method (CPM) and program evaluation review technique (PERT); techniques of cost-effectiveness for analysis of programs and program budgeting;

mathematical and statistical models for analyzing structure relationships; and other such methodologies are potential management information outputs. Analysis of this sort is beyond the present capacity of most program managers.

It is important to remember, in considering computerization, that a central processor capable of handling a multi-file, multi-access real-time system can perform analyses during slack times. The input, search, and output devices of any computer system capable of providing the services envisioned in this section would require a central processor which would be idle while waiting for the input, search, and output devices to complete their mechanical operations. This extra time could be put to use on management-oriented analysis which could lift the level of local program management to higher levels. In reality, since the complete file on every client, activity, and establishment would be stored in the central data bank, use of the data for program management is limited only by the basic source information,[65] the user's imagination, and the availability of computer time and financial and personnel resources.

Considerations in Evaluating TACRS

A. Top-down vs. Bottom-up Process. The common "top-down" approach to constructing a management information system assumes that first one determines the information management needs and then develops a system which fulfills these needs. The key to such a system

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[65] Because the system is based on operational records, for many program management problems external data will have to be combined with the information from TACRS. External data can easily be incorporated into this system.

is selectivity and analysis of data. Such a system can be evaluated on the criterion of how well it satisfies program management needs. The TACRS described here is not a "top-down" system; rather, it is based on the comprehensive computerized collection and storage of data and their quick and efficient retrieval. Such a "bottom-up" system should be decisions not only about program management, but, more importantly, about the direct delivery of services. A "bottom-up" system should be developed and evaluated primarily on the basis of its effect on the delivery of services rather than upon program management. As one management systems expert states:

> were all data to be captured, put in machine readable form and processed solely for the purpose of abstracting it into summaries or reports for management, the price might prove to be intolerably high. On the other hand, if the data were computer processed in order first to fulfill operational needs, and only secondarily for purposes of generating management control information, this would begin to make more economic sense.[66]

B. Confidentiality. TACRS opens the Pandora's box of confidentiality and invasion of privacy. In the current climate, with data banks under attack by both Congress and the public, it is likely that the creation of a central data bank for individual records would be of major concern to congressmen, other governmental officials, and the public in general. TACRS, being a real-time system, would certainly heighten the fears of invasion of privacy and loss of confidentiality. All individual agency confidential data would be locked in the computer by access codes, and even initial entry into the system by a terminal could be code locked. However, because the entry code would be known

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[66] Sherman C. Blumenthal, Management Inforation Systems (Englewood Cliffs, N.J.: Prentice-Hall, 1969), p. 22.

by all terminal operators of the agency, there still exists the real question as to whether this would be adequate protection of confidentiality. Since individual records can be retrieved after entry into the system, the slightest possibility of misuse becomes critical. The problem of confidentiality of data extends beyond individual files, since aggregated time and expenditure data may also be confidential. For example, for any establishment data the disclosure rules would have to be satisfied. Such aggregates as caseload by district for public assistance are confidential and would not be distributed.

C. Bureaucratic Considerations. Experience based on past attempts to centralize data processing in a traditionally decentralized framework consisting of relatively independent agencies raises serious doubts about the realistic possibility of the TACRS alternative. Rarely is an agency willing to relinquish its complete individual files and its major responsibility for file maintenance and reporting.[67] If we were considering only federally funded programs directly responsible to a single management source and totally dependent upon federal funds, TACRS might be thought feasible; but, in view of the current fragmentation of governmental responsibility and the variety of agency funding arrangements, it is presently politically infeasible.

D. Technological Considerations. TACRS is a real-time, data bank system. Both of these aspects of the model intensify the complexity of development. According to one expert view, "In a large

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[67] Ibid., p. 5.

[real-time] system, defining the specifications [for information handling] is usually a tortuous process which occupies a team of system analysts for many man-years even if the procedures are written up."[68] This view applies to a system for an individual business firm. In TACRS, where coordination among the wide disparity of agency needs must be satisfied, this task would be even more demanding. Another factor barring the realization of a real-time system would be the constant state of flux which characterizes the manpower services delivery system. With new agencies constantly coming into being, agencies being eliminated or consolidated, program objectives altering, etc., changes in the specifications for information handling are likely to occur frequently. Under these circumstances, it seems inevitable that the constant alteration will occasionally necessitate large-scale revisions in the system. In general, it is realized that the numerous problems in the planning and implementation of conventional data processing systems are greatly magnified by the greater complexity of real-time systems.

More important than the real-time technical considerations would be the data bank approach used in TACRS. This would involve the establishment and maintenance of a vast pool of highly detailed data containing everything necessary for operational control and program management. While this approach is theoretically attractive, it presents great practical difficulties. According to management information systems expert Sherman C. Blumenthal:

> The technical and theoretical problems are many, but they will doubtless someday be solved: Perhaps we

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[68] William Desmonde, Real-time Data Processing Systems (Englewood Cliffs, N. J.: Prentice-Hall, 1964), p. 11.

> shall ultimately have the giant generalized, cosmic data management system so much promised and never realized. Until then we would be well not to embark in this direction.[69]

Merged Individual File System

The political and technological obstacles to centralizing all data processing functions of manpower and manpower related agencies seem insurmontable in the present environment. A practical path to follow would seem to be delegation of the structuring, maintenance, and responsibility of the operational control information subsystem to each individual agency, with a focus upon the development of a coordinated modular information system for local area program management. Such a system is the Merged Indi idual File System described below. In MIFS, each agency's operational information system would be a module from which data would be transmitted to a central source where they would be merged, summarized, analyzed, and distributed. Basically, MIFS offers standardization of data elements for program management, compatibility of interagency data, and maximum flexibility of program management output. In relation to the existing system structure, what is required is elimination of the program management level of information processing from each agency and the substitution of a centralized coordinated management information system without centralizing the operational information system of each agency.

Basic Design of MIFS. Figure 10 presents the basic system structure of the MIFS. The modules (agencies' operational information

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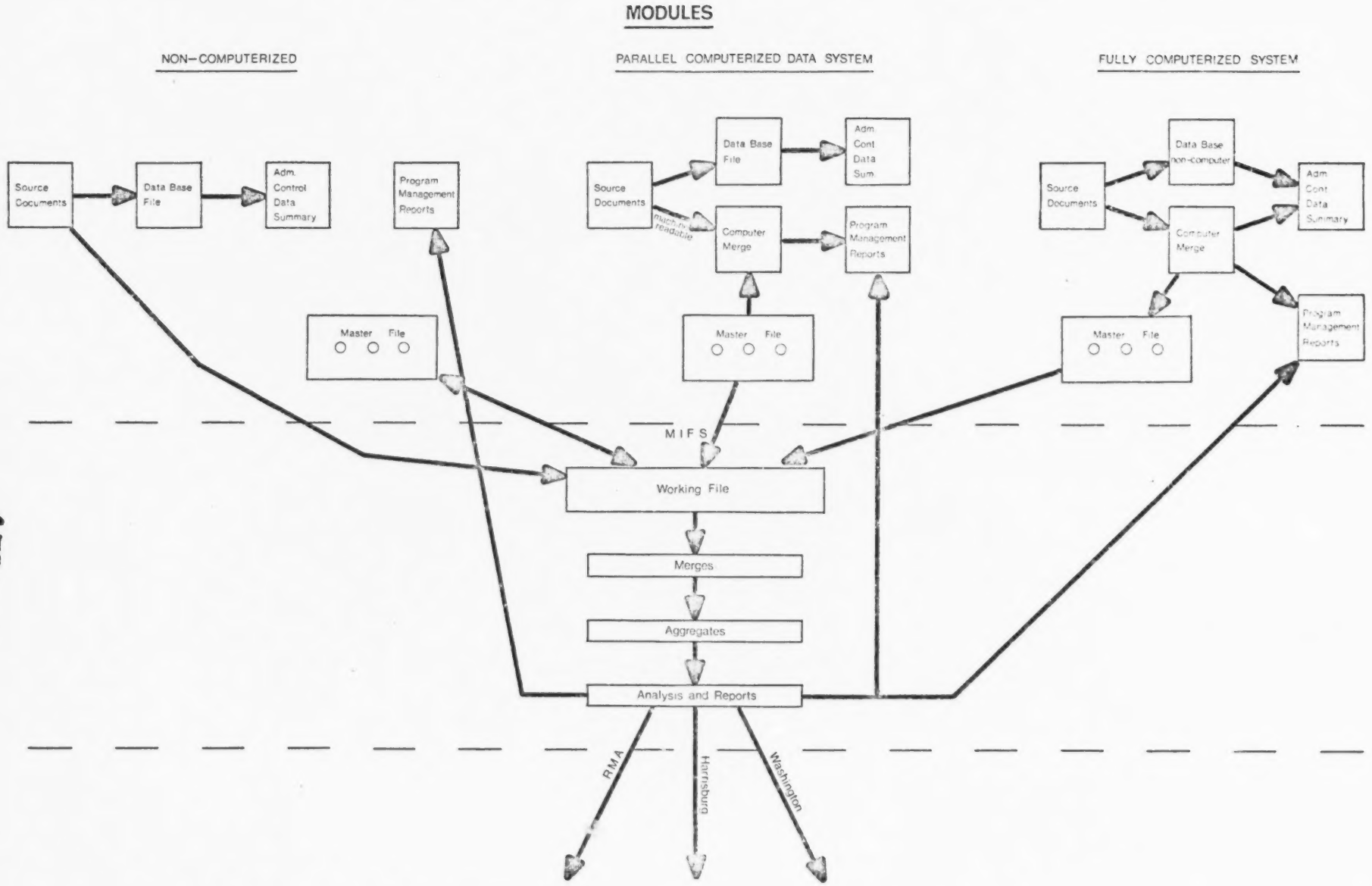
[69]Blumenthal, op. cit., p. 22.

Figure 10. MERGED INDIVIDUAL FILE SYSTEM



systems) can be any of three types: noncomputerized, parallel computerized, or fully computerized. The first two types currently exist in Philadelphia, while the last may at some future date become a reality. MIFS would be technologically most efficient if all modules were of the third type, but it can function with mixed systems of input. This is important since new agencies are constantly being created and differing levels of information processing sophistication among agencies are likely to remain a continuing consideration. Hence, it is important that modifications in the modules not have the effect of invalidating the MIFS.

Each module maintains a comprehensive file, indexed by clients. This represents a permanent storage of data to which the individual agency has random access for reference, updating, or report generating purposes. For computerized, or parallel computerized systems, such a file would most likely be stored on tape. In tracing the flow of information through the MIFS, the computerized module will be first considered. Tape master files become the basic input into the MIFS, and at an interface level between modules.

The interface between modules and MIFS computer facilities would consist of a data set called a working file. This file persists as an entity only long enough to provide a buffer between the numerous operating modules to merge and aggregate the files. Core memory is quickly erased so that a centralized individual file exists only momentarily. The output from the working file, summary figures useful for program management, would then be analyzed, reported, and distributed to the local agencies as well as to Harrisburg and/or Washington.

As management becomes more quantitatively sophisticated, analysis subroutines, such as analysis of variance, can be incorporated into the working file so that sums of squares, regression equations, and other analytically useful computations based on individual files can be outputs from the working file. Some agencies, such as the Social Security Administration, have developed software to generate sophisticated statistical analysis based on individual files using a working file system to meet confidentiality requirements.

There would be a variation in the information process for noncomputerized modules. Instead of tape inputs, the method of transmittal of data from the module would be any appropriate direct-access storage medium (i.e., card or optical mark reader). The particular method selected would be the one most compatible with the individual agency's information system. Assurances, of course, must be made that the different access storage medium be compatible with the MIFS hardware. The initial set of data transmitted would be returned to the agency, where it would then be kept as an agency central file. From then on, when the agency transmitted source data, the central file would also be transmitted. The centralized computer facility would then update the agency file and return it to the agency. It would also merge the updated file with those from other agencies.

In order to match records the central files of all agencies must have a common index. It is extremely important that the data inputs be accurate since conflicting data entries from the modules would have a significant effect upon the efficiency of the emerging

process. In ESARS, and most likely in MIFS, these errors result in rejection of the document, which is then returned to the local office for auditing. This error listing for ESARS is one of the major sources of irritation to local offices. Complaints about having to allocate too many scarce resources to this task are common. If the MIFS results in similar error listings, resistance to the system from local agencies can be expected. Hopefully, since the MIFS output is directed toward the local agency's program management needs, more incentive to collect accurate data will exist and a zero defects campaign might be successful.

In order to obtain maximum flexibility for program management, the informational inputs from each module should be based on individual or establishment records, so that the relationship of results measured by clients' services to objectives can be effectively developed. This is necessary for effective area manpower planning, cost-effectiveness comparisons and appraisals of various manpower and manpower related delivery systems, and coordination of regional manpower efforts.

Unlike the case with TACRS, the criterion for selection of data inputs is selectivity rather than comprehensiveness. Only those elements useful for program management would be inputs into MIFS, and only after intensive research could these elements be specified. It is unlikely that the set of program management data elements will consist of many elements not currently being gathered. Data inputs would most probably require new agreements on common data formats for storage within each agency, so that the data are compatible for merging. For maximum flexibility, formats should be on the basis

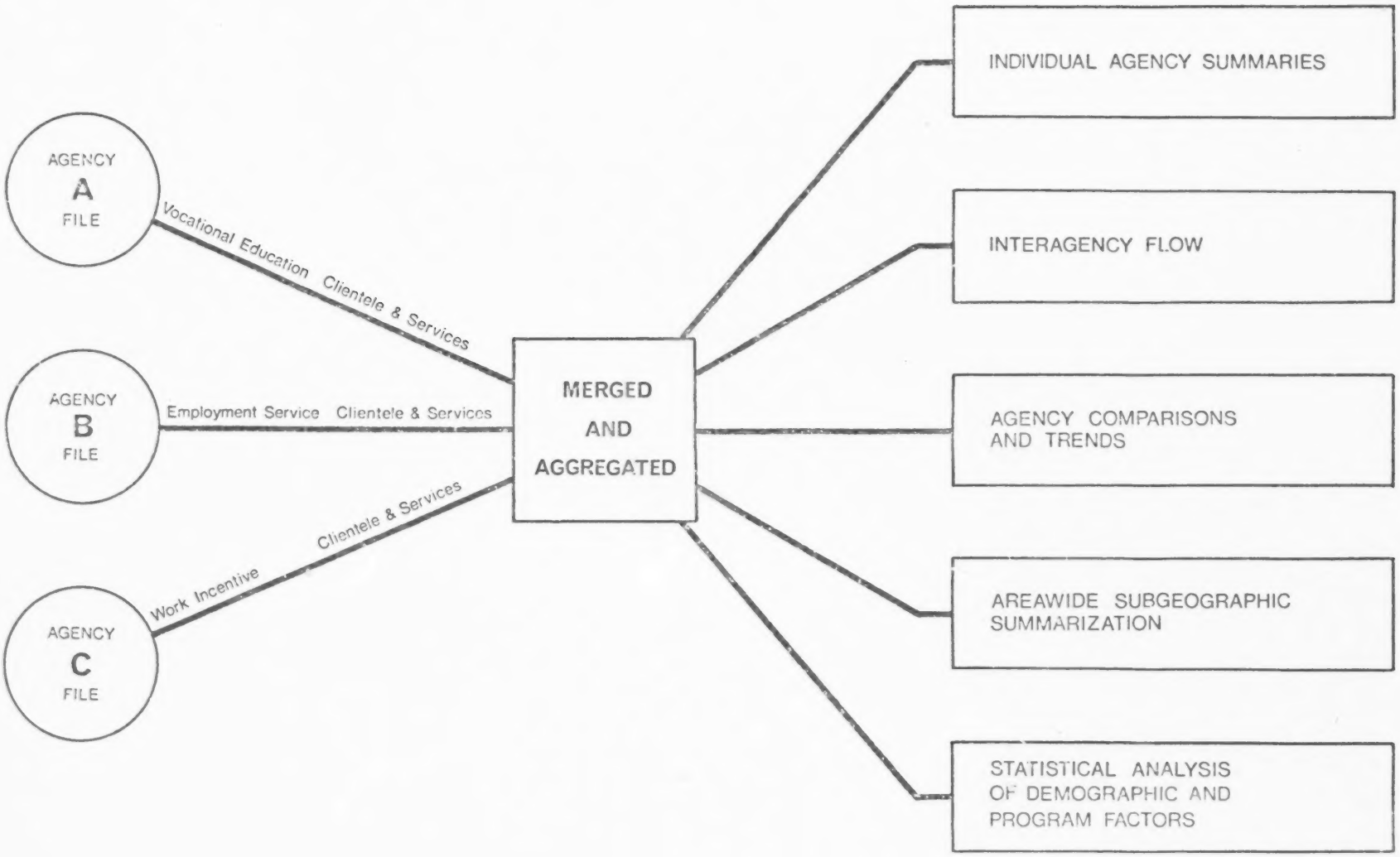
of least common denominator so that the merged data can be aggregated in various formats to satisfy agencies' differing needs.

The great volume of individual records would require that they be transmitted for processing to the central processing unit as quickly and as frequently as possible. Using ESARS as a prototype, data could be transfered to a punch card or an OMR form as normal operating procedure. The data could be audited and submitted on a daily basis with only a one- or two-day lag from when the data were initially collected. This would be necessary to facilitate processing and matching at the central processing unit and to allow ample feedback time for correction. Tape inputs could be transmitted weekly.

The output from MIFS would be restricted by design only to summary information and analysis (see Figure 11). Exactly the same types of program management information could be generated by MIFS as by the TACRS model. In reality it would be restricted only by basic source information, lack of imagination, computer time, personnel, and finances. As for the frequency and distribution of the information produced, some outputs would be on a weekly or monthly regularly recurring basis and would receive full distribution to all local agencies. Other output might be the result of special needs and be produced only upon specific demand and distributed only to the agencies or state or federal authorities requesting it.

Considerations in Evaluation of MIFS Model. MIFS is technologically feasible but far from immediately implementable. Development of the system would require much time, research, experimentation, and money. The most difficult task would be development of software to merge files from the different modules and, in particular, finding

Figure 11. OUTPUTS OF MERGED INDIVIDUAL FILE SYSTEM FROM CLIENT DATA INPUT



a common identifier. Judging from the ESARS experience, based on a system functioning within one agency, it would appear that implementation of MIFS would encompass many man-years of development. Moreover, the cost of developing and maintaining it might be too high to justify its existence on a cost-benefit basis.

There is no serious technical problem of confidentiality of individual records. These individual records would enter the MIFS working file, where they would be merged and aggregated. The individual records would be in the file only long enough to provide a buffer between modular inputs and would never be stored in the system. Programming can be developed so that it would be impossible to output individual record files. The only storage of individual records would be in the files kept at the agency supplying the data. A subroutine to adhere to the disclosure rules could easily be written into the merging process to assure aggregation which would conceal individual identification. Moreover, aggregates of time and expenditures deemed confidential by a particular agency could be eliminated from the system simply by having the agency remove the basic data from the file submitted.

The most serious obstacles are the organizational and bureaucratic considerations. The MIFS requires each agency to delegate many of its prerogatives concerning information processing. It would make available data for objective comparisons between agencies which might be resisted by such agencies if they thought their security was at stake. The technical burden placed upon an agency would be disproportionate, depending upon the size and structure of the agency. Because adoption of MIFS would be disruptive to many

agencies' current information processing systems, it is likely, therefore, that efforts to immediately introduce it would meet with considerable resistance.

CHAPTER VI

STRATEGY FOR SEQUENTIAL DEVELOPMENT TOWARD MIFS

In the previous chapter the advantages of a merged individual file system for flexibility, confidentiality, effective management information, and feasibility of implementation at the local area level were emphasized. Implementation of such a system, however, would have to overcome difficult organizational and technological obstacles. The uncoordinated and sometimes conflicting aspects of manpower programs would pose a number of problems, as would the cost and availability of information processing technology. What this implies is that MIFS can only be viewed presently as a goal which cannot be realized until some time in the future. In the meantime, however, systematic steps can be taken which will improve the current management information flows and which could eventually lead to the managerial applications envisioned by MIFS.

Too often long-term plans for a management information system are not realized because the proper function is neglected and realistic plans for implementation are never drawn. In this chapter a sequential procedure is outlined for an information system based on a series of steps, each of which can be modified as a result of evaluation of the previous stage of development.

The recommended process consists of three stages of information systems development. The first represents a preparatory stage for progress rather than a major improvement in the current system. Nevertheless, it does improve the exchange of information and provides the basis for a semblance of a local area management information system (LAMMIS).

Once the foundation has been laid in the initial stage, efforts are turned more directly to development and acceptance of an effective LAMMIS and ultimately to the MIFS. In the intermediate stage a transition system is developed which involves the beginnings of standardization and uniform definitions and introduces computer applications.

The final stage of information processing is a more fully computerized MIFS, such as the one outlined in the previous chapter. It involves maximum standardization and uniformity and the complete merging of individual files.

In order for the evolution of stages to occur, certain technical and administrative support must be given. Support consists of two types, (1) technical systems planning and implementation and (2) administrative actions necessary for effecting change. Exhibit 1 depicts the main support activities, which are not mutually exclusive. Organization, for example, clearly permeates the whole process. Moreover, the level of activity within each support category will normally increase and become more complex as the level of information processing becomes more sophisticated. However, certain support activity can be linked directly to the development of specific stages of information systems development. Exhibit 2 outlines this linkage.

Exhibit 1

Support Actions

Technical

Inventory and cataloging of existing information processing

Decision flow analysis

Data requirement analysis

Data standardization

Geocoding

Personal identifiers

Experimental MIFS

Administrative

Organization

Management data training

Technical assistance

Exhibit 2

Support Actions and Stage of Development

Stage of Development		Support
Initial:		
(Reference Center)	-	inventory and cataloging
Intermediate: management	-	management training in data use
(NRTAS)		technical assistance decision flow analysis data requirement analysis service bureau functions
Fully developed:	-	data standardization
(MIFS)		geocoding personal identifiers experimental MIFS

According to Arnoff and Brandenburg a computer system analyst must be concerned with organizational acceptance of planning the system, with implementation, with measurement problems, and with feedback into the planning process.[70] It is the first aspect, organizational acceptance, that underlies all stages of the system's development. In the current decentralized, fragmented manpower organizational environment it is recognized that any major shifts toward a centralized system are not apt to be readily accepted by the present manpower organizations. Thus, the sequential process presented attempts to minimize disturbance and seek gradual acceptance and agreement for the development of a coordinated LAMMIS. The initial objective of the system development becomes a common denominator of what technicians know can be done, area data processing managers believe can be done, and area program management understands and will allow to be done. However, conflicting levels of understanding, and often self-serving interests, can pose problems in achieving systems goals.[71]

Despite the many organizational barriers, a powerful motivation toward the ultimate goal is the inherent management appetite for continual innovation following initial successes. Small, early changes can lead to subsequent changes which accumulate into significant major alterations. However, assuming that no one individual or agency has the responsibility and authority for mandating change, progress may be often

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[70] H. Igor Arnoff and Richard C. Brandenburg, "A Program of Research in Business and Planning," Management Science, vol. 13, no. 6 (February, 1967), pp. B-219ff.

[71] Blumenthal, op. cit., p. 9

motivated as much by interagency relationships as by the objective advantages of the proposed change. If fuller authority and responsibility existed a different approach would be appropriate. The approach suggested may fall short of achieving the goals of the system, and yet -- given present agency structures and relationships-- it represents a path which would meet with minimal resistance.

A major aspect of the incremental three stages is long-range planning. Occasionally systems develop in a haphazard manner. Total systems evolve from changing subsystems developments required by differing functions, and these independent systems then become organically related in large complexes when imagination, opportunity, and politics permit. It is important that information systems planning be directed rather than left to merge merely from the interplay of agency interests that are narrower than those of "area management" as a whole, although such interplay can be an important regulating mechanism. Moreover, the technological prerequisites for more effective planning now exist. These include the emergence of compatible families of computers, mass storage capacity, remote terminals, data communications, comprehensive operating systems, real-time processing, new programming languages, and a new spirit and substance of professionalism in information processing.

The proposed strategy offers a rational plan for systematic development of a coordinated, effective local area manpower management information system. Each stage of action is coordinated with the ultimate objective, establishment of a plan for integration of various operational systems without serious disruption of the day-to-day

operational activities. The means of achievement is the gradual realization and acceptance on the part of local agencies that individual agency data bases and information exchange must be integrated to a much higher level than any one agency may require to satisfy an existing agency operation.

Initial Stage

The basic foundation upon which the sequential strategy builds is a complete cataloging of all data and information flows which currently exist within and between each agency. In view of the varied agency information systems and their complexities, this is an extremely challenging and specialized task. The aspects of each agency information system which must be analyzed are numerous and the information to be obtained is highly detailed.

The data required will have to be obtained after on-site inspection and interviews with agency personnel. The first stage will be to solicit cooperation through direct negotiation, explaining the purpose and importance of the process to each agency. If acceptance is to be obtained, assurance must be made that the inventory can be accomplished with minimum disruption to the agency's operations. In order to obtain high levels of completeness and accuracy, it will be advisable to use professional and highly trained personnel in these activities.

Basically the process should include

1. an examination and detailed listing of all forms, records, reports, and files.

2. the identification and analysis of all points at which data are generated, processed, analyzed, transmitted, and utilized.

3. a complete inventory of the data presently maintained within the agency.

Appendix A contains detailed checklist guidelines for the collection of this information.

Once the analysis has been completed the first semblance of a LAMMIS can be introduced in the Philadelphia area. The information gathered can be stored and indexed at a central facility (to be referred to as the reference center) which will make possible a coordinated centralized local area information center. Using the compiled reference directory and constantly updating it, the reference center will function as a centralizing point for all interagency information requests. Directing all inquiries to a central source can accomplish significant management information objectives:

1. Stimulation of interagency exchange of information.
2. Availability, on request, of immediate knowledge as to whether the requested information is accessible and, if accessible, where, in what form, and the proper procedures for obtaining it.
3. Shielding the already burdened operating units from unnecessary data requests and overcoming the inability to combine certain data due to lack of standardization, thus protecting against faulty inferences.

The actual functioning of the reference center would be extremely simple. The compilation and release of data would be

determined by individual agencies. While the actual release would remain at the discretion of the agency, various procedures for transmitting the request from the intermediary reference center to the individual agencies can be considered. One method would be simply for the center staff to refer the inquiry to the appropriate person in the agency. All negotiations for the data would then be directly between the agency and the requesting party. The reference center's sole involvement would be to conduct the initial evaluation of the information needs and make the referral to the agency.

A second procedure would be for the reference staff to act as an intermediary throughout the total interchange of information. Because the center's staff would be fully knowledgeable of each agency's information processing capabilities--and would have initially determined the requesting party's specific information needs--the agency would not be required to negotiate directly with a requesting party which might be unaware of information capabilities and limitations. A working procedure would be for the reference center to submit to the agency an official request for information, specifying not only what data were requested, but also where they could be found and how compiled (see Appendix A for sample form). Moreover, with this method the center would act as a shield against unnecessary or unfillable demands for data.

This procedure would seem particularly suitable for special inquiries or one-time searches for needed manpower information for special program management problems. An additional advantage of this full intermediary position would be that the control center would have

on file all special compilations of information and could make participating agencies aware of these data.

A slight modification in this procedure would facilitate the processing of many requests for information. Certain data which were regularly processed by an agency and made available for release outside the agency could be stored at the center. Moreover, along with these public reports, the participating agencies could make other data accessible, noting specific limitations on distribution. With this source of information the reference center could act directly as a distribution center for informational requests which could be met from such data. Besides transmitting these data upon request, the center could advertise their availability, or even distribute them routinely, formalizing interagency exchange of information.

The reference center would not require computer capability. However, it might be efficient to store the reference directory and submitted reported data in a computer bank and provide for terminal access to the information from each agency. While this would not be necessary for the reference center to function, it might greatly enhance the flow of information because of the immediate accessibility and retrieval of the information.

When evaluated as a LAMMIS, the reference center system clearly leaves much to be desired. It does not assure a flow of information or compatibility of data, nor does it provide any consolidated local area management information. However, when evaluated against the goal of an effective LAMMIS, the reference center system seems highly suitable as a first developmental step.

A major advantage of the reference center is the ease of initiating such a system. From both cost and personnel viewpoints the requirements are minimal. Technical requirements for implementing the system are few; the system can be made operational almost immediately, and productive after the analysis of current information is completed. More importantly, both politically and organizationally, such a system is eminently feasible. There exists no threat to the sovereignty of any individual agency, and the preliminary system would be responsive to the demands for coordinated manpower planning. Also, because no data or individuals would ever leave the agency and release of data would be at the discretion of each agency, the reference center would not be involved in problems of confidentiality.

While the reference center obviously does not present solutions for many of the major information problems existing in the current situation, it offers some improvement, the most significant being the facilitation and stimulation of dissemination and analysis of local area management information. Ideally, the reference center would increase the demand for information, focus attention on system weaknesses, and stimulate the thinking necessary for the acceptance and implementation of a more effective LAMMIS.

Intermediate Stage

The previous stage laid the concept and foundation for an effective LAMMIS. In the next stage efforts must be directed to systems planning and development toward the ultimate objective, the

MIFS. This planning should be done within the framework of existing applications because of the possible need to economize on resources, the need for continuity in the information that each agency currently provides, and the need to provide an improving information system with minimal disruption.

The suggested process is first to determine the management information requirements which must be satisfied. This entails defining all program management decisions currently being made by each agency management. The process must also consider decisions being made without adequate data or situations in which decisions should be but are not being made, since supplying data for solutions in such situations may be the most important contribution of a LAMMIS. Two things to be determined are who is making the decision (or should be making the decision) and the relationships among the decisions within and among agencies. Time sequences of the decision must also be studied.

After a detailed analysis of each agency's decision process has been completed, the next task is to relate each decision back to the initial statement of the problem and objectives, so as to determine whether it is a decision function within the scope of a LAMMIS. Having narrowed the set of problems, objectives, and related decisions the LAMMIS must support, effort now centers on diagnosing the data relevant to solution of the problems. Not only the optimal sets of data but also suboptimal alternative sets should be specified, since obtaining the former may not be feasible.

Data should include more than the specification of data elements. The format, level of aggregation, frequency and timing and, where appropriate, statistical analysis of the data elements must also be specified.

Following the construction of idealized decision flow-charts and accompanying information requirements, the information managers will draw upon the analysis of the current information processes. Initially the conceptualized decision flow must be compared with the existing decision flow in order to determine which decisions are being made by default and which are not permitted by the present organizational responsibilities. For these cases, the needed changes must be presented to the relevant agencies for their consideration, and, where changes are unacceptable, revision in the conceptual decision flow will have to be made.

Full attention can be given to the data problems. A theoretically ideal data base from operational records can be defined from the conceptual approach; a currently available data base contained in operating records can be defined from the analysis of the data situation. The two data bases will be distinctly different. Since current data are generated by various distinct agencies, each source has different methods of defining measures and classifying and storing data. This data incompatibility regulates the ideal data base to an abstract and theoretical concept. The practical data base to be achieved will represent a compromise between the ideal and what exists. Compromise is necessary due to organizational and statutory constraints, the nonrecurring usage of some requested information, the technical difficulty of acquiring some elements of

information, and financial limitations. Nevertheless, the initial analysis will point out the significant gaps in data elements collected and differences in data formats and definitions, in data storage procedures, and in timing of data requirements. Such analysis is needed to give direction to negotiating standardization among agencies.

Two alternative strategies for negotiating standardization could be adopted. One would be to isolate the data elements most frequently needed in the decision process and attempt to standardize those yielding the highest decision value. While this approach is appealing, it is possible that the data elements might also be those on which it is most difficult to reach interagency accord, since they represent key decision elements and definitions often tailored specifically to an agency's needs. Thus, this approach might encounter too much resistance. The second strategy would be to isolate those data elements currently at the best level of standardization for which a common basis for agreement already existed. Considering the criterion of minimizing disruption, the second alternative seems wiser. To further minimize disturbance and expense, plans should incorporate existing data processing code standards from higher levels of government.

The problems in negotiating standardization should not be slighted. Results of the negotiations should constitute a written document detailing the criteria for every data element for which standards have been agreed. It is foolish, however, to believe that total standardization can be achieved given the existing organizational and

statutory constraints. In instances where compliance is infeasible, analysis will have to be undertaken to provide translation between noncompliant and standardized data.

In previous planning stages of constructing an effective management information system, issues and problems were identified, problem areas were diagnosed, and possible solutions to standardizing information among agencies were proposed. To minimize possible conflicts or resistances which may arise, actions may be necessary which will add incentives for change.

Experience has shown that strong resistance to change from a status quo frequently occurs when managerial training has been predominantly on-the-job. This resistance is due to apprehension that expertise, prestige, and even jobs depend on the utilization of knowledge gained in this way and that new techniques may make this knowledge irrelevant. Thus a first and very important step in facilitating change would be to start an intensive training and education program for managers which would deal with the objectives, potentials, realities, and uses of a coordinated local area information system. Especially important is the effective use of proposed outputs. Too many information systems are disappointments, not because useful informational outputs are not generated, but because they are never used. A frequent complaint of local managers is that they are being submerged under paper blizzards of irrelevant data. This complaint stems in part from the fact that local managers do not know how to use the valuable outputs generated and in part because much output is geared to

state and federal needs and is irrelevant to local needs. The former problems must be solved by education and training. In addition to interpreting and using data output, training will attempt to acquaint managers with the basic concepts of computers and management criteria used to evaluate statistical information. Increased awareness of local managers of the value of data will boost the demand for data and smooth the development path of an effective LAMMIS.

Enlightening state and federal officials to local area needs will encompass lobbying and negotiating local interests regarding reporting responsibilities. Clearly, any LAMMIS must be developed within the constraints of federal and state reporting and information systems and will require negotiations. It would be the function of technical experts on task forces to serve as expert witnesses in Washington and Harrisburg and to recommend changes in state and national systems which would facilitate feedback and compatibility of local area data processing for program management with existing or proposed federal and state data processing requirements.

In addition to management training, technical systems assistance would be offered each agency. Providing technical personnel to assist in systems development will be extremely important in reducing resistance among agencies in view of the present personnel shortages and pressures for better information processing. This will not only facilitate agency change, but will provide interagency task forces with better capacity to meet performance standards for developing the MIFS and assurance that hardware and software among differing agencies will be as compatible as possible.

A useful introduction at this stage would be a computer processing service bureau. The actual facility employed could be one an agency already possesses which has slack time, or computer time could be purchased from any one of the many commercial time-sharing systems available or from one of the university computer centers located in Philadelphia. A service bureau would serve as both aid and incentive for participation in a LAMMIS for the numerous agencies which have no ADP capabilities; it would also facilitate development of the intermediate stage. For agencies manually processing and storing data, without computer innovation, it would be a major task to process data which currently are not used, or even to alter formats of reporting which would significantly change current data processing procedures. In those instances in which there was a shortage of data processing personnel, requests which would place new burdens on existing staff would be expected to meet with resentment. However, by offering computerized data processing services, the burden of data processing would be lightened. More importantly, this would induce all agencies to collect or transcribe their data into machine-readable form, an important consideration in the development of MIFS. This would also simplify somewhat the difficulties of standardization since only standardizations at storage level would be necessary, thus permitting more diversity in computer processing aggregation. Moreover, inducing the sharing of ADP capacities would reduce unused capacity and lower costs in comparison with a noncentralized system.

One of the most powerful incentives for gaining agency cooperation could be the allocation of funds for each aspect of the information systems development. Both Washington and Harrisburg are potential sources of funds for systems development for a coordinated LANMIS. The federal government is now providing financial inducements to encourage cooperation at a local level in a number of fields, including information processing. Federal funds would likely act as a catalyst combining a grant-in-aid to encourage agency information system development with required review and conformity to statutory requirements for a coordinated LANMIS.

Having reached an initial stage of data standardization and with the introduction of the service bureau, most agencies would have their data in machine-readable form. It would thus be possible to expand the reference center concept to include data sharing, and to add data other than those normally reported or processed. A Koncentralized Random Terminal Access System (NRTAS) could link each agency by typewriter terminals with the reference center. As in the reference center system, all data would remain under the total jurisdiction of the agency gathering the data.

An interagency board would assume the function of data access control. It would be organized to negotiate the release and exchange of data. For certain sets of data, a plan would be developed which would specify who would be authorized users, what particular information might be released, when or how often it might be released and at what levels of collection, and how and by whom the expense should be borne. These explicit written regulations would then be built into computer programs which would greatly enhance input and output controls.

Opportunities for protection of data in a computerized data processing system with a well structured and documented set of rules are much greater than in ordinary noncomputerized ("hard paper") files. Software design would assure the maximum degree of security for the system.

With those sets of data for which specific exchange has been mutually agreed upon by the interagency board, access could be made randomly by terminal inquiry by any designated party and output and distribution would be automatically processed. Agencies having computer capabilities would handle the processing with their own hardware; those lacking such facilities would employ the service bureau for processing data. The service bureau would create tape files for each agency as it normally processed its machine-readable inputs. The agencies would possess a telecommunication system which would allow them to input their tapes to the computer facility at the service bureau, which would be linked to the terminal system. Thus, when a request was received, the agency would simply load the appropriate tapes and the processing and output would be done by the service bureau. Appropriate software designs would assure confidentiality.

Arrangements could be made to protect the confidentiality of individual reports so that cooperating agencies could have access to statistical information at a very disaggregate level. It would be possible for the original collecting agency simply to remove all identification of the individuals or firms before allowing the data to be released. This would allow cross tabulations and summaries of small numbers of individuals or firms without violating confidentiality.

For ad hoc requests for data not conforming to the written policies and standards reflected in the software, requests would be granted on an exception basis at the discretion of the agency with jurisdiction over the data.

The output from such a system would be limited only by what data were stored in machine-readable forms and what data were agreed upon for release.

Fully Developed Stage

Clearly, NRTAS is only a short step from the ultimate MIFS goal; when NRTAS was operational the final resolutions of the problem of data standardization could be negotiated.

Aside from data standardization two important systems aspects would remain to be negotiated: the development of geocoding and common identification systems for all agencies. Although both tasks are extremely complex and difficult to accomplish, they are important for program management and systems development of MIFS. Geocoding would provide a means of coordinating data regardless of program jurisdiction, since any form of aggregation on an area basis could be accomplished. In a sense this would be the "least common denominator" solution to the area definition problem. It would also permit isolating figures for target areas, combining data for more than one agency, and even analyzing an individual agency's data.

The use of personal identifiers provides the linkage for combining or matching individual records for program management use. The confidentiality question must remain uppermost, and assurances must be made that

there is no intent to use common personal identifiers to assemble operational dossiers on individuals. The need for such an identifier is vital not only for the technical development of MIFS but also for program management purposes. It allows for (1) positive identification of individuals' statuses within and among agencies for purposes of transmitting that information to requesting agencies on a more automated basis; (2) summarization of information on individuals from various sources without double counting; and (3) correlation of data for management analysis. In addition, the successful introduction of common personal identifiers linkage will further enhance cooperation among agencies and lay the foundation for data sharing.

With the completion of these support tasks, the introduction of a centralized request system and matching of files are all that remain to be accomplished. After the NRTAS system is smoothly operating, a small-scale experimental model of MIFS should be introduced. This would permit analysis of possible problems and a subsequent evaluation of whether a full-scale MIFS is cost-benefit justifiable.

As an experimental model, a continuing sample of participants and establishments in the manpower programs would be drawn, with the data inputs coming from operating records.[72] Each participant would have known probability of being included in the sample and thus valid statistical estimates could be made. The only constraint would be that individuals whose records were contained in two or more agencies could not be selected only by one. An alphabetical method of selection

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[72] A modification of an idea suggested by Edward Bryant, President of Westat, Inc.

would be appropriate since most files are by name, followed by matching through the use of personal identifiers.

The use of a continuing sample before initiating a full MIFS is recommended for the following reasons: it would provide an experimental situation to solve the technological problem of matching with minimal disturbance to existing systems, and it would greatly reduce the cost of "debugging" the MIFS while lightening the burden on participating agencies.

In addition, the continuing sample plan would offer significant improvements in its own right:

1. More detailed information could be obtained for the sample clients.

2. Better controls could be imposed, assuring greater accuracy for the sample.

3. If linked to a NRTAS, the systems would yield estimates of double counting.

4. It would yield on a sample estimate basis all the information the MIFS could but at less cost.

If the experimental continuing sample plan were successful and the benefits such that a full MIFS was warranted, the final step would be to expand the experiment into a fully functioning MIFS.

Organizational Aspects

Too often systems specialists concerned with the introduction of change concentrate exclusively on the technical software and hardware aspects of an information system and ignore the orgnization that must

be developed to carry out the planning and implementation necessary to gain acceptance of proposed changes.

The basic structure of the information system organization calls for two levels of hierarchy. The top level would consist of an interagency board comprised of representatives from each participating agency. It would parallel the concept and structure of CAMPS, with members drawn from upper level agency management. The immediate task of the interagency board would be to focus attention upon the needs for and problems connected with a LAMMIS. The specific purpose of the board would include the creation of a vehicle for negotiating an information system based on the common and differing agency interests, incorporating a common understanding and definition of the problem and an accepted course of action. If agreement on a course of action was reached, authority for change would be self-generated by the stature of the board, assuming support of state and federal authorities was provided.

Under the board, and reporting to it, would be a task force comprised of systems and management specialists who would be responsible for carrying out the actual analysis, generating recommendations to the board, and implementing the accepted course of action.

The size and staffing of the task force would be dependent upon the stage of development. In the initial stage a very small but well qualified task force would be structured. Because the task force would likely be funded by the regional manpower administrator, it is probable that a large, professional task force initially would be viewed as a

threat by many agencies, who would assume the regional manpower administrator was planning to force a LAMMIS on them. Thus, it would be advantageous to structure first a small task force without too much fanfare so as to alleviate fears. For the initial stage there is no technical reason for a large staff. A computer systems expert would not be needed until after the reference center was well underway. Later, as the need for personnel became greater, the staff would be enlarged. Much of the work could be accomplished contractually by outside consultants who would be neutral in any interagency negotiation. As the staff grew, more services such as management data training and technical assistance would be offered, justifying staff expansion.

This task force would properly undertake two specific types of analysis, an organizational analysis and a systems analysis. The former would be a systematic attempt to predict and document in advance the fears, anxieties, and objectives of the agencies to be included in the system. It is necessary and possible to plan the implementation of change in such a way that stress is minimized as much as possible. (Appendix A contains diagrams offering an analytical approach to the organizational problem of change.)

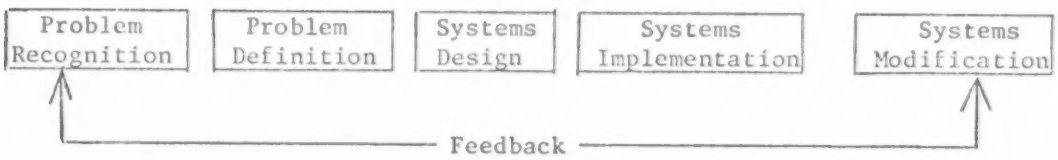
The systems analysis, while naturally dealing with specific problems, must also insure that uncoordinated development does not occur. A major cause of the multiplication of systems tends to be management's inability to assess existing and potential management applications separately conceived by different agencies. Another cause is the lack of a consistent and uniformly applied approach to the integration of modules into a larger entity of greater scope. The systems planning function must, therefore,

encompass the review of all proposed systems in terms of criteria designed to minimize the disparity among modules, thus broadening their scope, and to place them in proper sequence for development. (The specific planning requirements to meet this objective are listed in Appendix A.)

The relationship between the board and the task force requires clarification. Ultimate decision-making authority would rest with the board, while the basic analysis, recommendations, and technical implementation would be the responsibilities of the task force. This does not mean, however, that the board would simply meet once a month to vote on the task force's recommendations. Nor does it mean that the task force would always deal with the board as a whole. Clearly some problems would concern only certain members of the board. Thus, for many specific problems the task force would engage in direct consultation and negotiation with specific board members. The board in whole or in part, moreover, would have to assume an active part in the total planning, though its roles would vary depending upon the phase of planning. In general there are five broad phases of systems planning, as depicted in Exhibit 3.

Exhibit 3

Systems Planning Phases



The first stage, problem recognition, must be a prime responsibility of the board and the management specialists on the task force. Too often,

when initiating a management system, the computer specialists are charged to recognize and state the problems to be solved when in fact the managers themselves are the only ones who can truly define the problem area. Many management problems cannot be recognized unless one has an intimate knowledge of the local manpower situation.

Once the problems have been recognized and the board agrees upon priorities, the next stage is problem definition, i.e., a clear statement of the problem and of the management objectives. Here again the board must take an active part since the board members will be responsible for solving the problems and thus make sure the right problem is being solved and the proper objectives met.

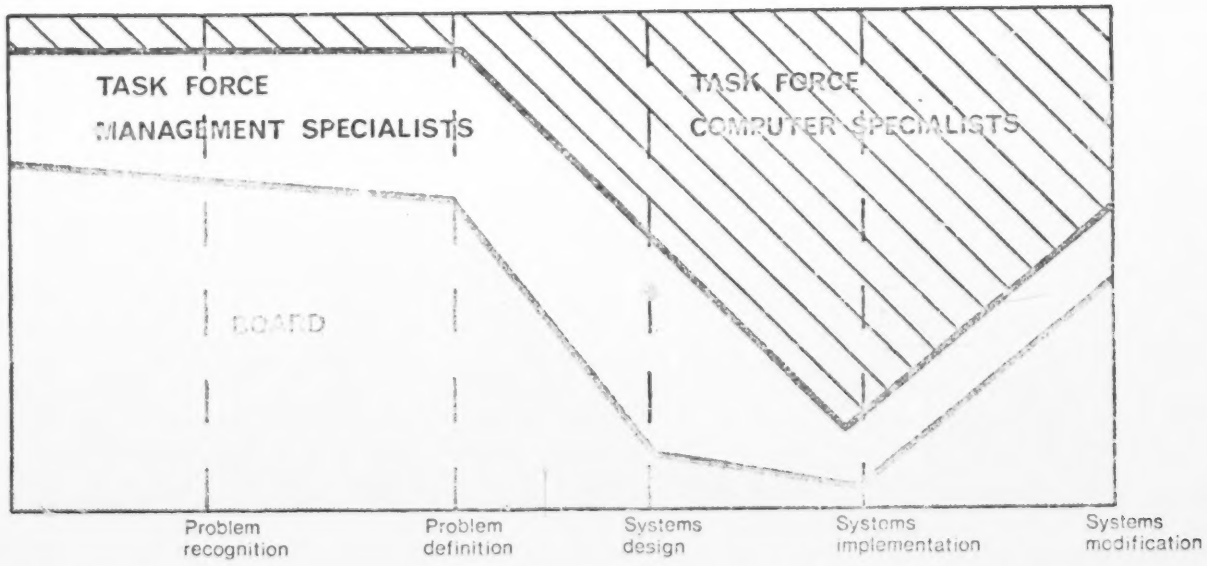
Computer experts are required for the next two stages in the task force, since the majority of the work is technical. However, the board must be available for consultation.

The last stage, systems modification, is crucial to the whole sequential strategy for development. It is anticipated that each improvement successfully implemented will spark the board's enthusiasm for better information and act as a propellant toward MIFS. Presumably the board will not only be involved in this phase, but will often be initiator of specific steps.

Although it is impossible to identify in quantitative terms the board's and task force's participation in each stage, Figure 12 qualitatively depicts the degrees of participation.

The entire strategy presented is based on an assumption of continued fragmentation of manpower programs and authority in the

Figure 12. ALLOCATION OF SYSTEMS RESPONSIBILITIES BETWEEN INTERAGENCY BOARD AND TASK FORCES



Philadelphia area. Given these constraints the strategy attempts to induce agencies into coordinating information for their individual and collective benefit.

It is altogether possible that the character of the local manpower situation will alter drastically in the future. Decentralization or new federal or state policies could mandate coordination of information, establish an area manager, or even mandate, fund, and structure a totally automated centralized manpower or municipality information system. One could even speculate that a total public sector information system, centralized and coordinated from the federal to the local area, may be what the future holds. However, assuming the continuation of the present climate, the recommendations of this study, if more mundane than the above, appear to constitute a realistic approach to solving the problems of producing an efficient local area manpower management information system.

APPENDIX A

TECHNICAL ELEMENTS IN SEQUENTIAL DEVELOPMENT TOWARD A MERGED INDIVIDUAL FILE SYSTEM (MIFS)

Details of Planning Phase
Details of Analysis Phase
Overall Systems Planning Objectives
Guidelines for Compiling Reference Library
Data Element Analysis
Report Analysis
File Analysis
Flow Analysis
Sample Data Request Form

Details of Planning Phase

1. State Desired Objectives

   Time span of change
   Reduction of stress
   Acceptance

2. Set Mechanisms for Achieving Objectives

   Interagency involvement in planning and decision-making process
   Consultation
   Communication
   Negotiation
   Compensation
   Education

3. State Likely Obstacles to Achievement of Objectives

   Preconceived ideas
   Adverse influence of rumor
   Hostility from agencies due to unjustified fears
   Agency differences in objectives
   Agency differences in loyalties
   Agency jealousies

4. Set Out Plan

   A general plan for agencies known to be neutral or accepting
     a. Subplans for agencies needing special treatment
     b. Alternative plans to meet uncertainty
   Detail the timing and phasing of plan

5. Ask and Answer Following Questions

   Who is responsible for its implementation
   What feedback mechanisms are required to evaluate stages
   What policy issues are involved and must be decided in advance
   What new lines of communications and committees must be set up

Details of Analysis Phase

1. Agencies

Nature of agency loyalties arising from common goals, formal relationships, budgetary and political ties.

Agency attitudes toward change.

Interagency personal relationships between managers.

2. The Environment

Nature and extent of propaganda, gossip, rumor, etc., concerning computerized management information system.

Agency's previous handling of technical change--concern it has for its own self-interests.

Degree of harmony and conflict among agencies.

Political climate.

3. Anticipated consequences of change

Short-term

- Redunancy
- Retraining
- Change in agency staffing needs
- Impact of change on agency management functions

Long-term

- Impact on agency management functions
- Impact on agency management responsibilities
- Impact on agency management structure

Adapted from: Computers: Planning for People, Enid Mumford and T. B. Ward, Batsford Ltd., 1968.

Overall Systems Planning Objectives

1. To avoid overlapping development of major systems elements which are widely applicable across agency lines, when there is no compelling technical or bureacratic reason for difference.

2. To help ensure a uniform basis for determining sequence of development among agencies.

3. To minimize the eventual cost of integrating various agency operational control systems.

4. To provide adaptability of systems to the constant change and flux of manpower programs.

5. To provide guidelines for and direction to the continuing systems development studies and projects leading to MIFS.

6. To provide a foundation for the coordinated development of MIFS.

Guidelines for Compiling Reference Library

Form Analysis (for every form, record, and working paper used by agency).

1. Purpose of form.
2. When instituted and by whom.
3. Type of forms (single or multipart, machine-readable or nonmachine-readable).
4. Frequency.
5. Time span.
6. Volume.
7. Information entered on form (data fields, formats, definitions).
8. Who originates and how (criteria for originating, source of information).
9. Accuracy and completeness.
10. Distribution.
11. Uses.
12. Is it filed (where, how, and how long).
13. Copy of form.

Data Element Analysis
(For Each Element on Every Form)

1. Definition.
2. Form recorded on.
3. Formats.
4. Purposes.
5. Data fields.
6. Compiled (how, frequency, time span).
7. Frequency of collection.
8. Reported (on what forms, what formats, frequency, distribution).
9. Who originates.
10. Accuracy and completeness.
11. Time span.
12. File identification.

Report Analysis

1. Purpose of report.
2. When instituted and by whom.
3. Time span of report (if periodic).
4. Regularly recurring or special.
5. Frequency of report.
6. Who prepares and how (information sources), controls for completeness and accuracy.
7. Who issues report.
8. Distribution.
9. Is it filed (where, how, and for how long).
10. Information in report.
11. Accuracy and completeness.
12. Uses.
13. Copy of report.

File Analysis

1. How many forms are included in file (are all records in file of the same format).
2. Indexing procedure of file.
3. Type of file (what equipment if any is used to hold and employ file).
4. Responsibilities for file maintenance and employ updating.
5. Time span (decay, updating schedule).
6. Accuracy.
7. Use of file (what reports or forms are dependent upon file information).

Flow Analysis
(For Each Processing Station)

1. Input documents received.
2. Source of documents received.
3. Frequency of documents received.
4. Volume of documents received.
5. Time span.
6. Are there agency, state, or federal policies covering requirements for processing.
7. What processing is done with each input document.
    a. Information taken off (how used, how is missing data handled, frequency).
    b. Information entered (source of information).
    c. Calculations performed.
    d. Files or other reference data consulted or effected by processing.
8. Accuracy and completeness of inputs and processing.
9. Outputs from processing (forms).
10. Frequency of outputs.
11. Volume of outputs.
12. Distribution of outputs.

Sample Data Request Form

Agency (or affiliation) of person requesting _____

Person requesting _____

Telephone_____

Address _____

Date of request _____

Request taken by _____

Date data required _____

Request:

Data _____

_____

Form _____

_____

Source _____

_____

Requesting party will pay for compiling data _____ Yes _____ No

Requesting party will supply staff for compiling data _____ Yes

_____ No

Request for data _____ Acceptable

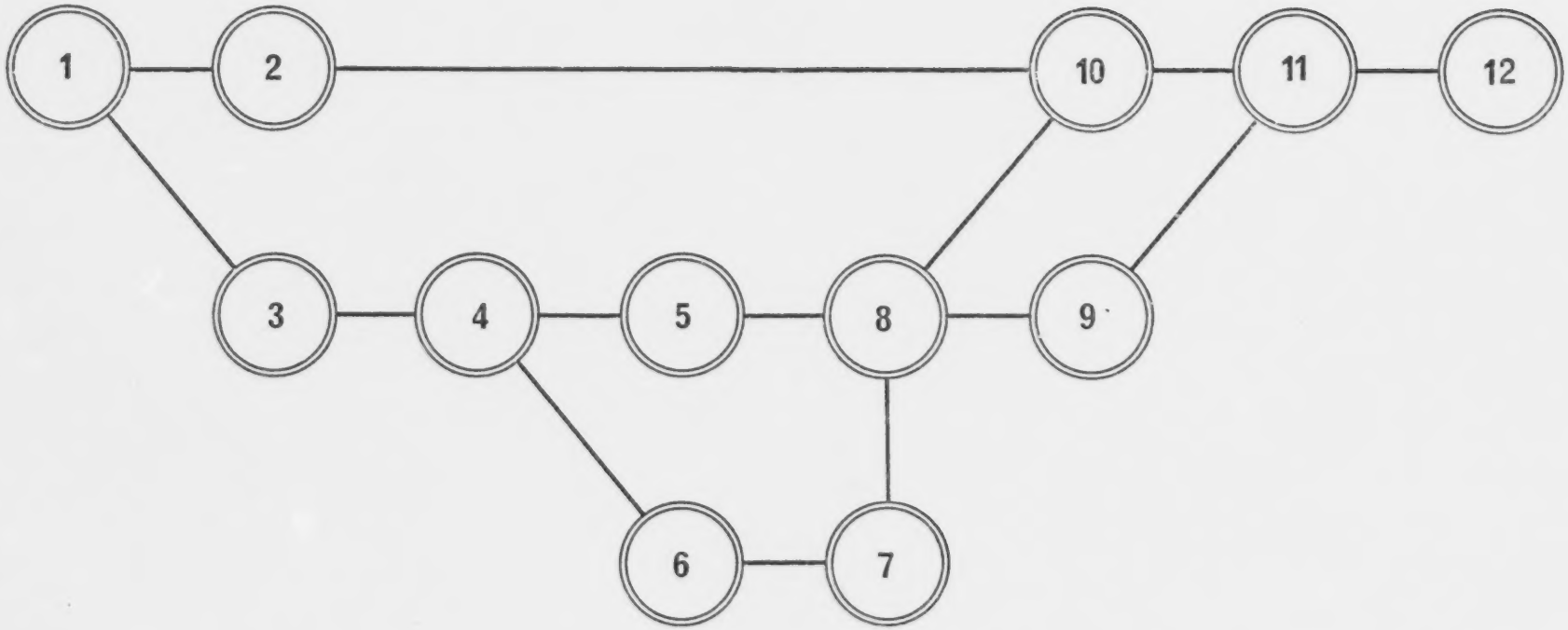
_____ Unacceptable

Comments _____

_____

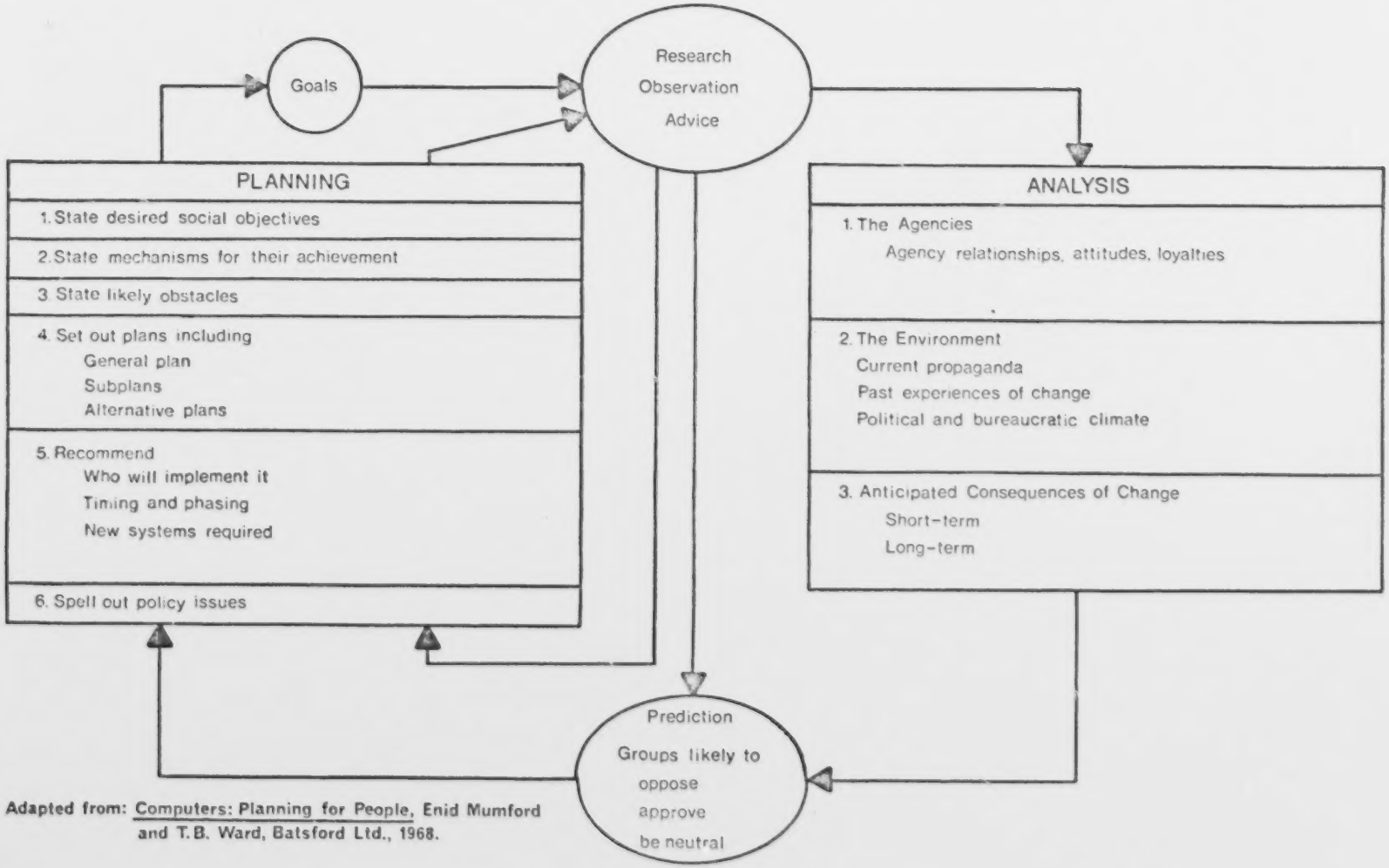
_____

Figure A-1. TASK SCHEDULE FOR STRATEGY



1 REFERENCE ANALYSIS
2 CONTROL CENTER
3 DECISION FLOW ANALYSIS
4 DATA ANALYSIS
5 DATA STANDARDIZATION
6 MANAGEMENT TRAINING AND EDUCATON
7 TECHNICAL ASSISTANCE
8 SERVICE BUREAU
9 GEOCODING AND PERSONAL IDENTIFIER
10 NONCENTRALIZED RANDOM TERMINAL ACCESS SYSTEM (NRTAS)
11 CONTINUING SAMPLE EXPERIMENTAL MIFS
12 MIFS

Figure A-2. SCHEME FOR HANDLING SOCIAL PROBLEM OF CHANGE



Adapted from: Computers: Planning for People, Enid Mumford and T.B. Ward, Batsford Ltd., 1968.

Figure A-3. DECISION ANALYSIS

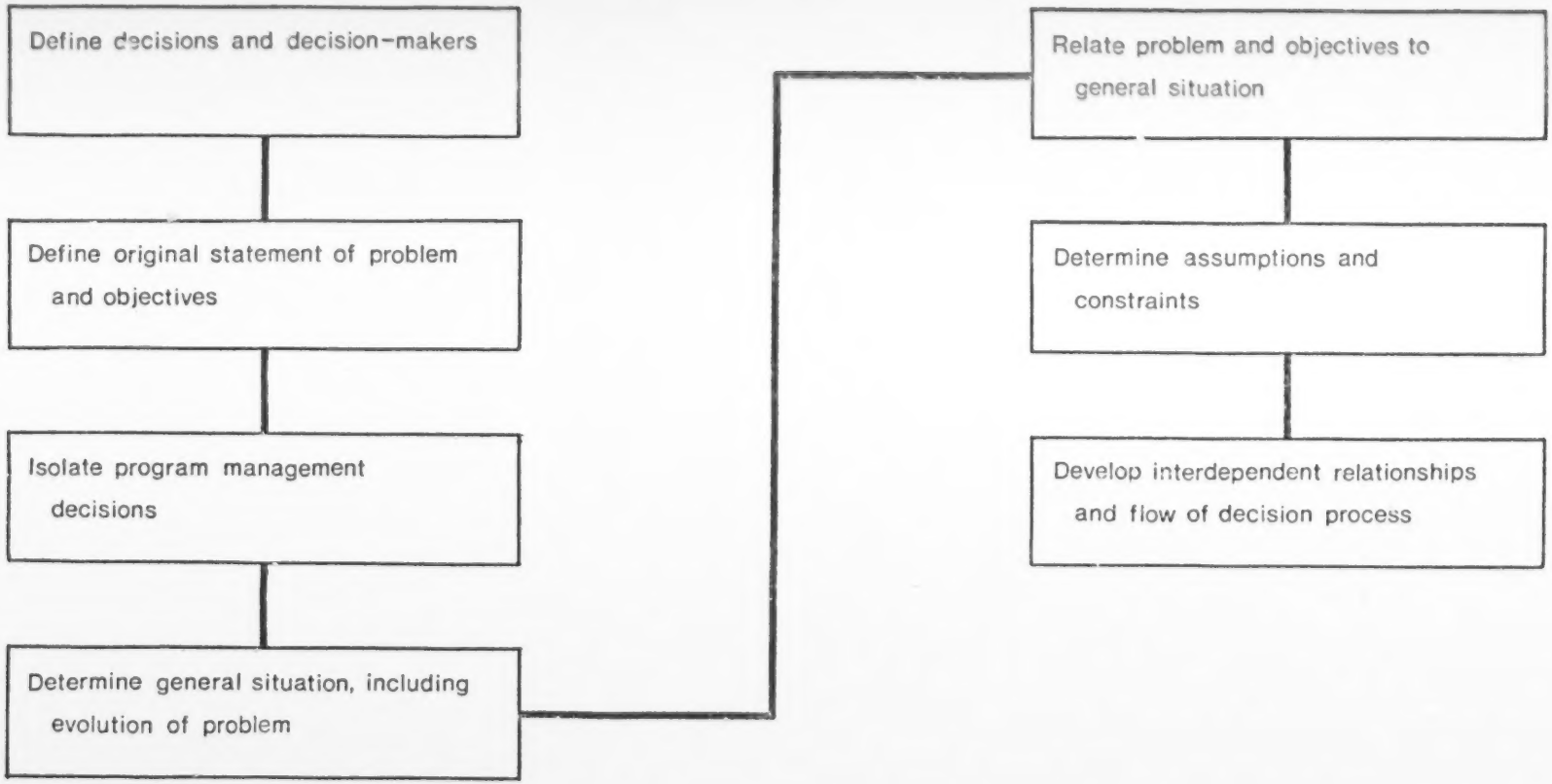

Define decisions and decision-makers
Define original statement of problem and objectives
Isolate program management decisions
Determine general situation, including evolution of problem
Relate problem and objectives to general situation
Determine assumptions and constraints
Develop interdependent relationships and flow of decision process

Figure A-4. DATA ANALYSIS

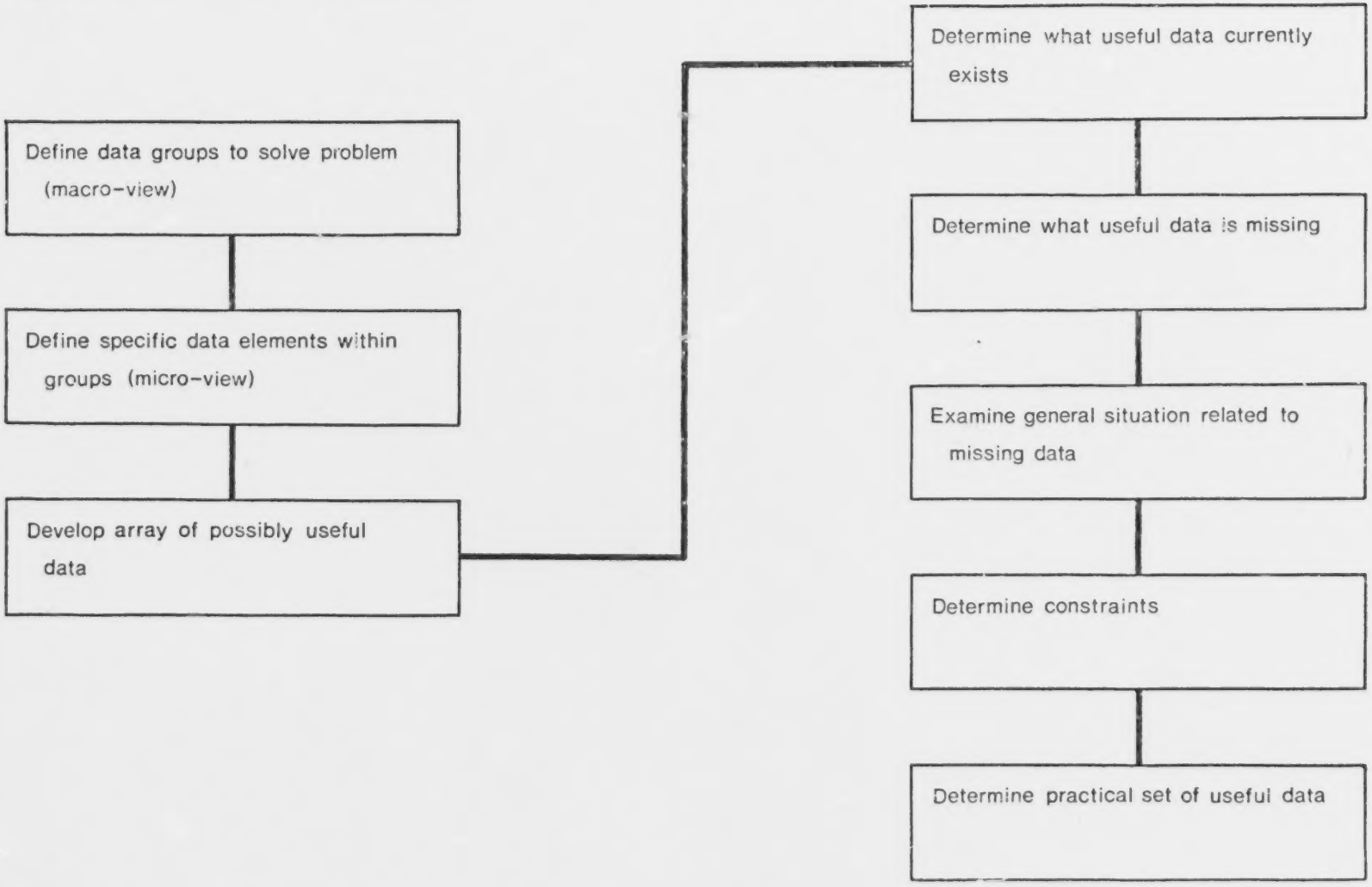

Define data groups to solve problem (macro-view)
Define specific data elements within groups (micro-view)
Develop array of possibly useful data
Determine what useful data currently exists
Determine what useful data is missing
Examine general situation related to missing data
Determine constraints
Determine practical set of useful data

Figure A-5. NONCENTRALIZED RANDOM TERMINAL ACCESS SYSTEM (NRTAS)

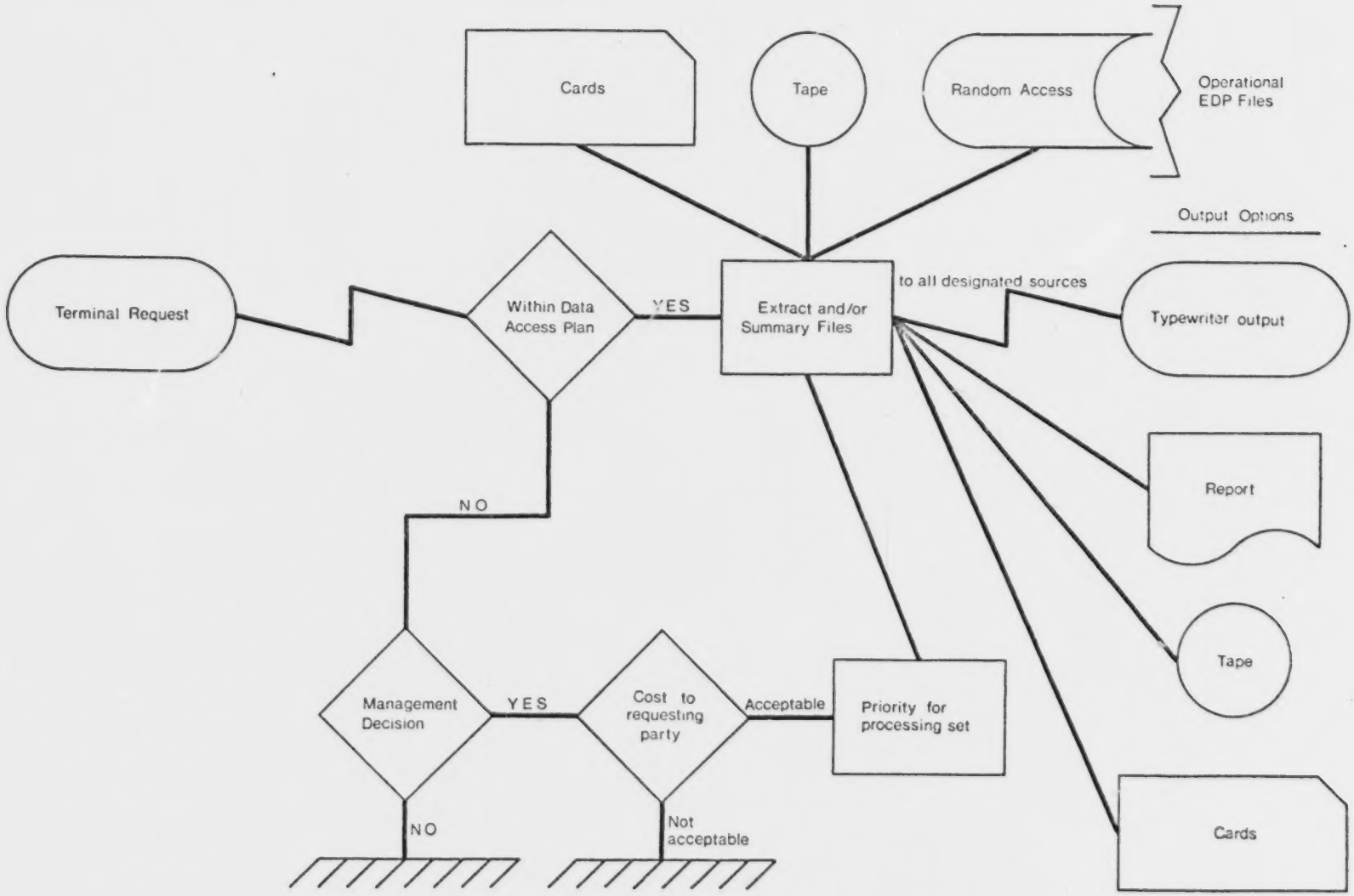
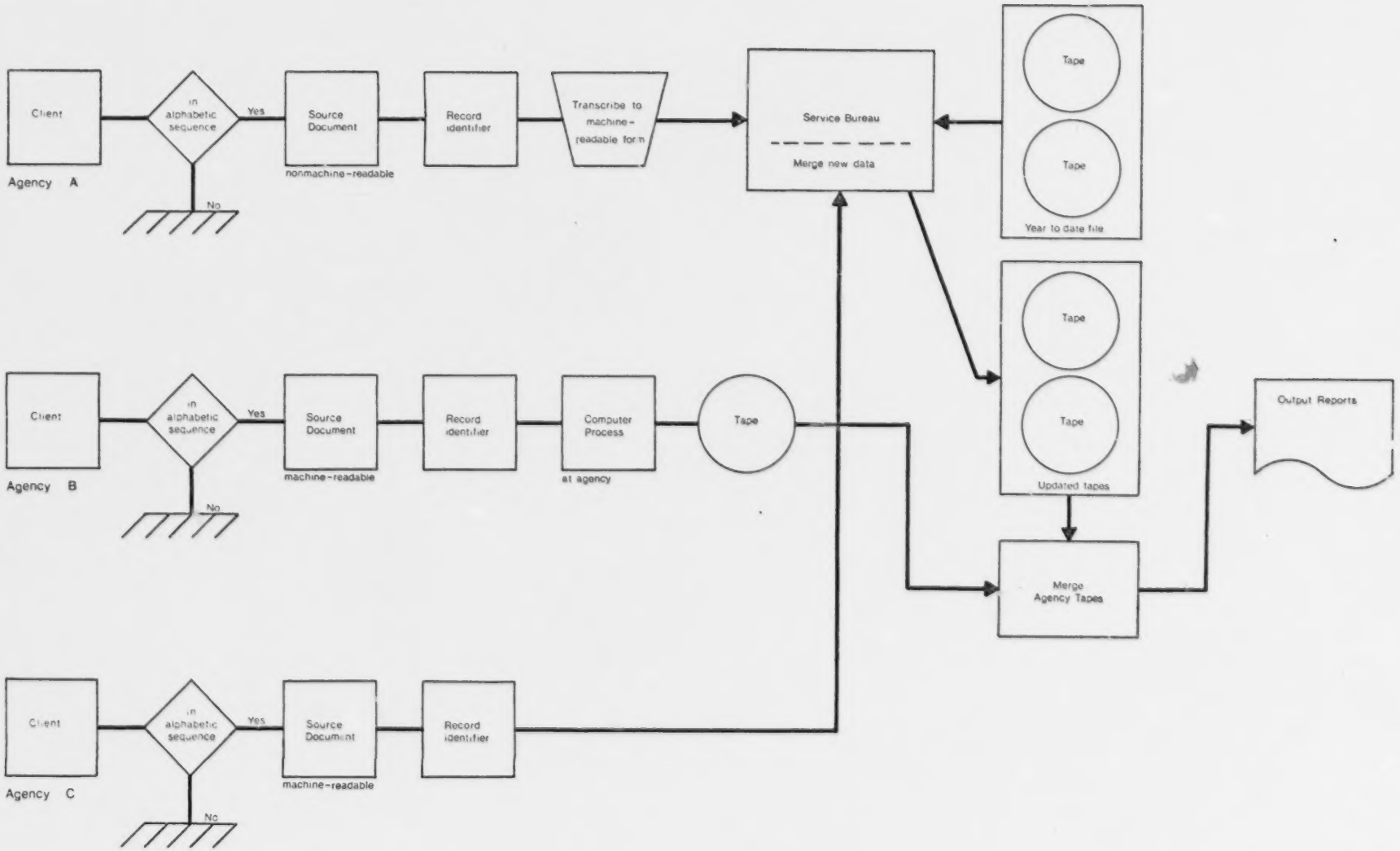


Figure A-6. CONTINUING SAMPLE PLAN



APPENDIX B

EXAMPLES OF CURRENT MANPOWER INFORMATION FLOWS

Concentrated Employment Program

The Philadelphia Concentrated Employment Program is a prime example of a noncomputerized information processing situation structured by federal requirements. The main information flow at CEP is dominated by the federally required MA system, which consists of four sets of forms distinguished by the headings MA, R, D, and S. The MA denotes an official reporting form: source document, statistical summary, or activity report. While the MA forms are completed in five copies, only three are assigned. One is distributed to Washington, one is placed in the individual's traveling folder (if the MA is a source document). Only the MA and C forms are released from the local office. The C forms are the control forms designated to monitor the paperwork in the system to assure that all information is being properly transmitted to Washington. The R forms, all source documents, are transcribed in the aggregate on an MA form; they are filed at the local office and are not distributed outside the agency. The S forms are supportive forms used to compile the summary MA reports. These act as the bridge between the source documents and summary MA forms and are numbered according to the MA forms they support (i.e., S5-16 is the working form for compilation of MA 5-16). The formal MA system forms are presented in Exhibit B-1. The flow of information in the MA

Exhibit B-1

The Formal MA System Forms

I. Source Documents

MA 5-5	(1970)	Status Change Notice
MA 101	(1968)	Applicant Information Record
R-1	(1970)	Pre-enrollee Record
R-2	(1970)	Follow-Through Record

II. Individual Summary

MA 104	(1968)	Individual Termination Record
C-1	(1970)	Monthly New Enrollees/Termination

III. Statistical Summaries

MA 5-30 (1970)	Monthly Summary of Enrollee Characteristics

IV. Activity Report

MA 5-16 (1970)	Monthly Program Activities Summary

system is shown in Figure B-1. The data elements gathered are presented in Exhibits B-2, B-3, and B-4.

However, the CEP management has found the federal MA system does not fully meet its own monitoring and evaluating needs and has made modification (additions) for the program's internal use. These additions are designed primarily as a monitoring system to keep abreast of each applicant's status and team work loads, and to monitor accomplishments (measured in terms of the numbers served in each component against the program's stated goals in the CEP contract). The major aspects of the alterations are control forms such as a caseload assignment list, and a client roldex file, and the use of a ledger as a centralized form where all the basic operating data gathered for an individual from all sources are posted.

The data kept on the ledger consist of (1) team enrollee assigned to; (2) how long applicant is in each component; (3) whether he was referred for a job; (4) outcome of any referrals; (5) if hired, the name and address of employer, a job description, and wage rate; and (6) any miscellaneous comments reported by the workers. In addition, job information is recorded on the ES 514. The information gathered (for internal use only) includes name of firm, occupation code, occupation title, number of openings, industrial code, rate of pay, job title, and hours.

Figure B-3 depicts the interweaving of the "shadow" system with the MA system. The only internal management form which is not an MA form is the so-called "one-page wonder," which compares accomplishments to planned goals.

Figure B-1. MANPOWER ADMINISTRATION INFORMATION FLOW

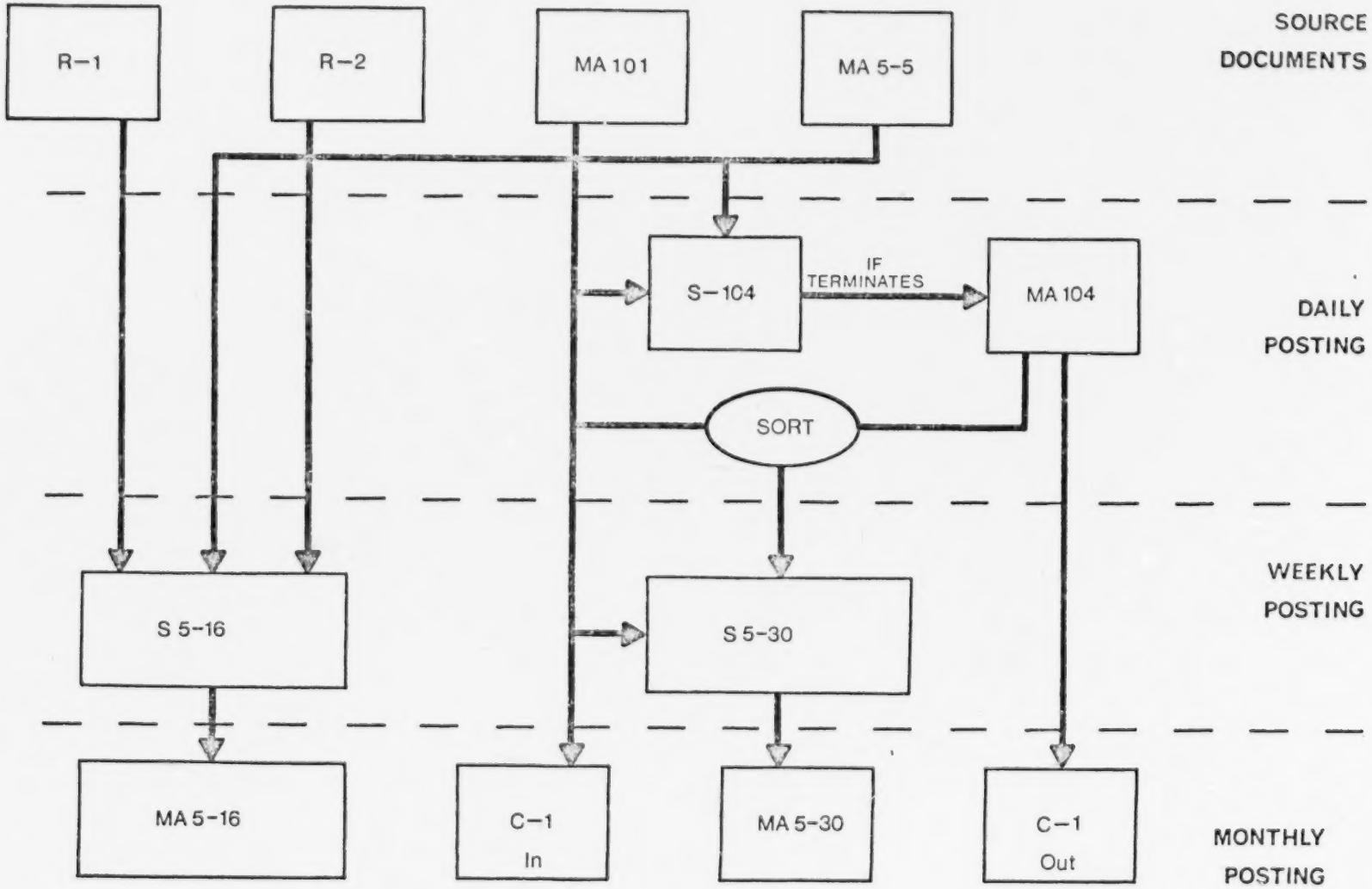
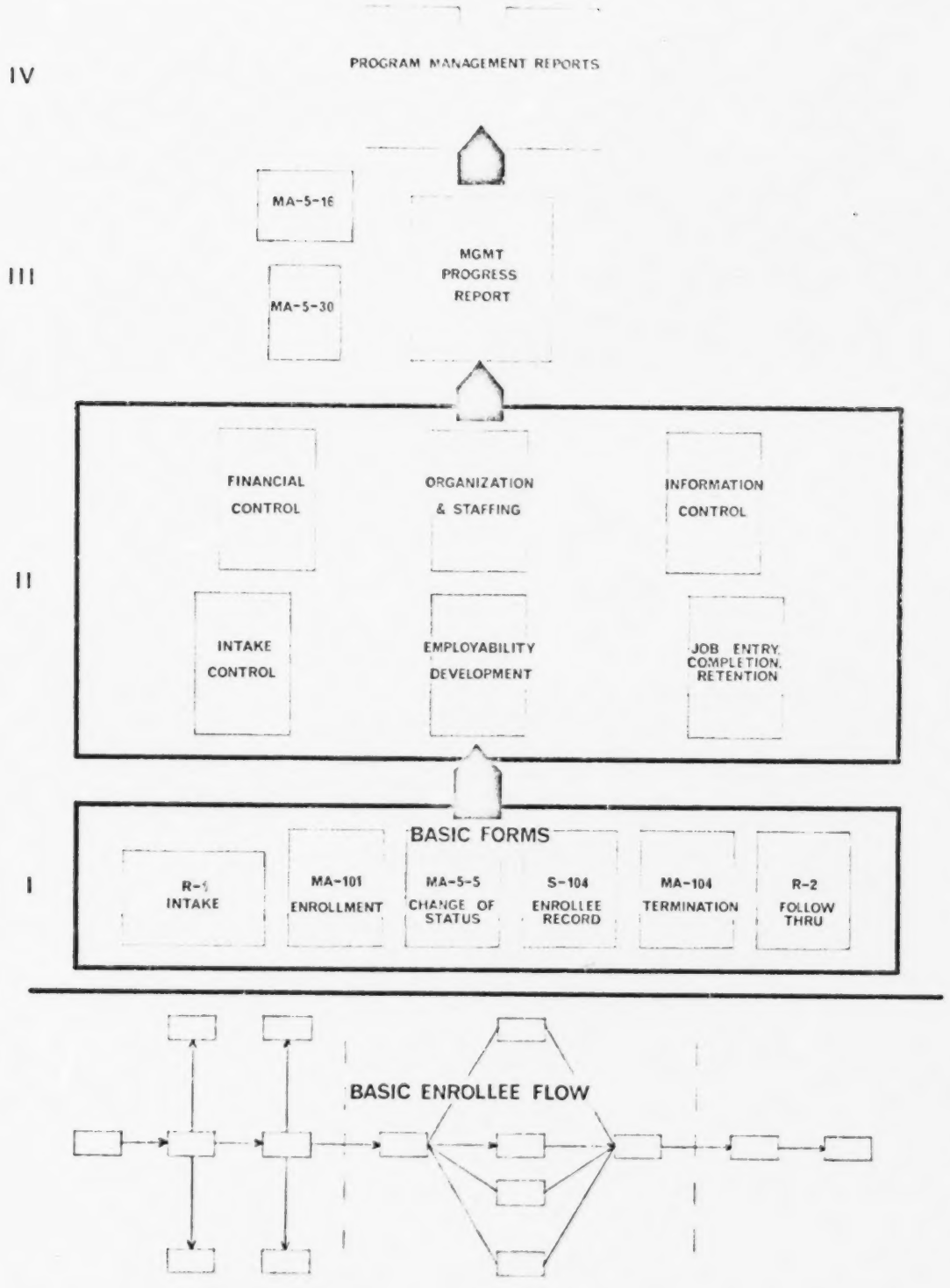


Figure B-2. CEP MANAGEMENT SYSTEM



Source: Urban Institute, Working Papers 305-1&2.

Exhibit B-2

Data Elements in MA System on Individual

Elements	Forms
Name	All
Address	MA 101, R-1, R-2
Social Security Number	MA 101, R-1, R-2, C-1, MA 5-5
Age	MA 101, R-1
Sex	MA 101, R-1
Handicapped	MA 101, R-1
Military Status	MA 101
Marital Status	MA 101
Head of Family	MA 101, R-1
Number of Dependents	MA 101
Race	MA 101, R-1
Spanish Surname	MA 101, R-1
U. I. Claimant	MA 101
P. A. Recipient	MA 101, R-1
Education	MA 101, R-1
Previous Job Training	
Yes/No	MA 101
Title	MA 101
DOT Code	MA 101
Participation in Other Federal Programs	MA 101
Primary Occupation	
Title	MA 101
DOT Code	MA 101
Last Job	
Title	MA 101
DOT Code	MA 101
Years of Gainful Employment	MA 101
Last Hourly Wage	MA 101
Income Last 12 Months	
Family	MA 101
Self	MA 101
Labor Force Status	MA 101
Weeks Unemployed	
Current spell	MA 101
Last Month	MA 101
Disadvantaged	MA 101, R-1
Eligibility for Training Allowance	MA 101
Date of Application	MA 101, R-1
Financial Aid Received	MA 101
Reside in Public Housing	MA 101
Participant in CWT and/or Title V	MA 101
Number of Dependents by Age	MA 101
Number of Dependents Who Need Care by Age	MA 101
Component Entered	MA 5-5

Exhibit B-2 (Continued)

Component Left Placement	MA 5-5
Title	MA 5-5, R-1
DOT Code	MA 5-5, R-1
Hr/Week	MA 5-5, R-1
Hr/Wage	MA 5-5, R-1
Reason for Termination	MA 5-5

Exhibit B-3

Summarized Individual Characteristics, MA System

Item	Form
Sex	MA 5-30
Race	MA 5-30
Spanish Surname	MA 5-30
Age	MA 5-30
Education	MA 5-30
Disadvantaged	MA 5-30
Head of Family	MA 5-30
Public Assistance Recipient	MA 5-30

Note: All items are categorized by new enrollees, job entrances, dropouts, other terminations.

Exhibit B-4

Activity Information in MA System

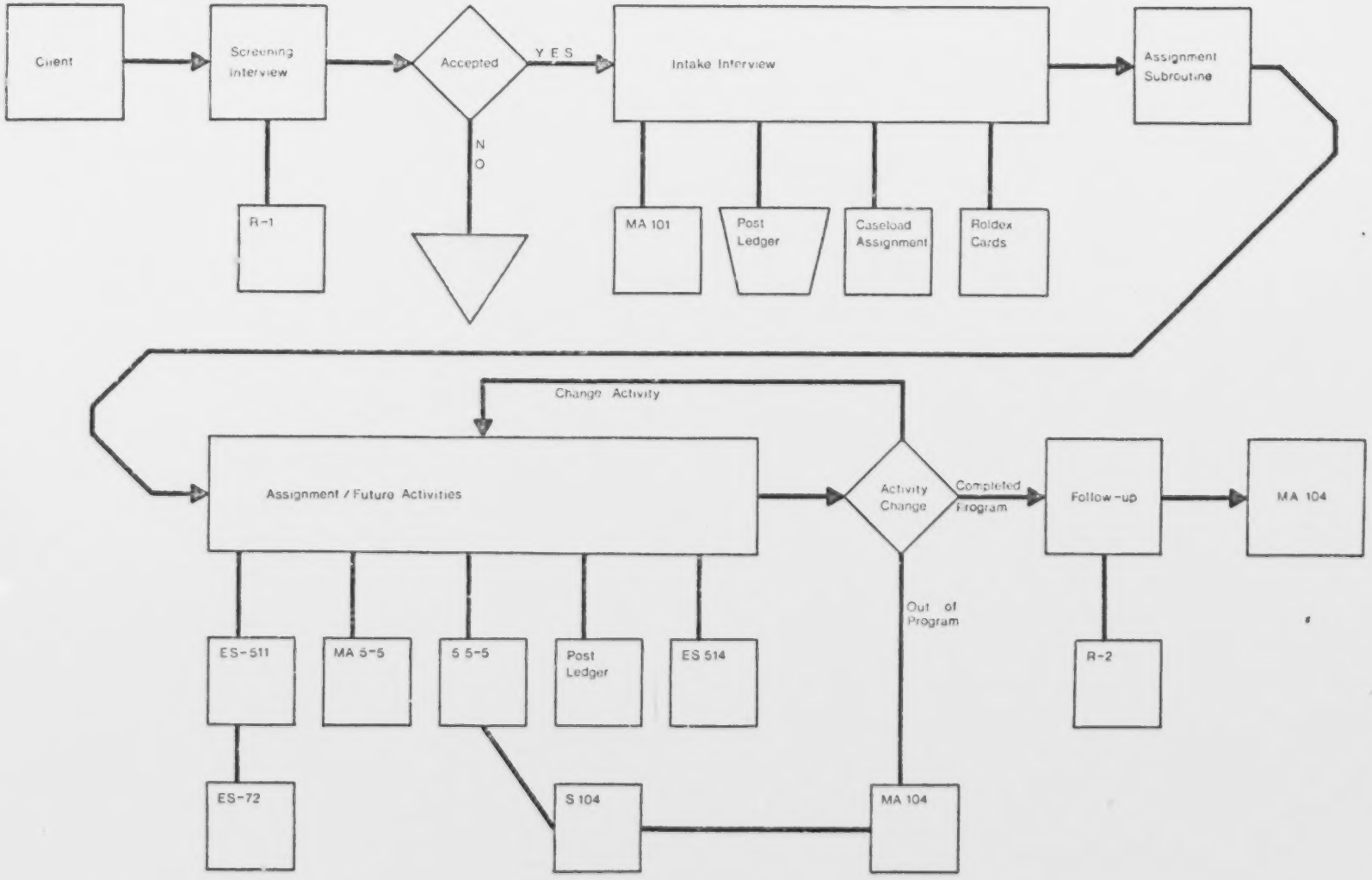
Items

For each component: Monthly activity in, out (by transfer or termination reason).

Year to date totals in, out (by transfer or termination reason).

Pre-enrollee contacts (monthly and year to date).
Pre-enrollee placements (monthly and year to date).
Number of full-time staff.
Post-enrollee contacts.

Figure B-3. CONCENTRATED EMPLOYMENT PROGRAM: CLIENT-SOURCE DOCUMENT FLOW
DAILY INDIVIDUAL RECORD FLOW



The complete CEP data processing is non-computer oriented with one current modification. The MA 101 form is being keypunched for computer usage in the future. No other forms are machine-readable at the local level.

Local Office of the Bureau of Employment Security*

The information processing at a local full service office of the Bur au of Employment Security is a dual system. The operational information for servicing clients consists of one system, which is completely manual. Processing is done at the local office. The second system, management information, is the totally computerized Employment Service Automated Records System (ESARS). The local office participation in data processing is limited to transcribing the source data onto optical mark reader forms and sending the completed forms to Harrisburg, where all the data processing is done. Both systems were developed by Harrisburg and are used with little or no modifications by the local offices.

The forms used at the local BES office are presented in Exhibit B-5. The ES and BUR titled forms are nonmachine-readable. The ESARS titled forms are optical mark reader forms. Note that there are no statistical summary forms. As mentioned above, all management outputs are generated in Harrisburg from the ESARS and flow back to the local

---

*The information system described for a local Employment Security office is also representative of the local WIN office, with one addition: the WIN program, operated by the BES and funded by the Manpower Administration, also uses the federally required MA reporting system described in the previous section.

Exhibit B-5

Employment Service Forms

Source Documents

ES-511	(1957)		Application Record
ES-3500	(1969)		Supplement to ES-511
ES-514	(1960)		Job Order
ES-580	(1967)		Training Record Card
ES-614A*	(1967)		Counseling Record Card
BUR-550**	(1970)		Report on Claimant Characteristics
BUR-550A	(1970)		Special Report on Claimant Characteristics
ESARS 1	(1969)	(OMR)	Registered Applicant Characteristics
ESARS 2	(1968)	(OMR)	Job Order
ESARS 3	(1969)	(OMR)	ESARS Transactions

Summary Forms

ES-72	(1969)	Monthly Testing Report

Activity Reports

ES-302	(1961)	Weekly Report of Local Office Activities
ES-605C	(1969)	Weekly Report of Claims Personnel
ES-809***	(1968)	Report of Claims Activity
ES-2985	(1969)	ESARS Transition Activity Report
ES-2984	(1969)	Work Sheet for ES2985

Special Forms

	(1970)	1970 Summer Employment Program for Youth Activity
ES-231	(1968)	Employment Service Job Corps Activity
ES-299 (Supp)	(1969)	Service to Selected Age Groups
	(1970)	Report of GBO Activities
ES-4200	(1970)	Report on Project Independence Activities

*Completed for only randomly selected 2% sample.

**Completed for only randomly selected 59% sample.

***To be eliminated when ESARS fully functional.

office. The data elements gathered at the local office are delineated in Exhibits B-6, B-7, B-8, and B-9.

The flow of daily information is diagrammed in Figure B-4. Figure B-5 displays the information processing flow. Currently the distribution of forms is as follows: all ES* and BUR titled forms are distributed to the district office and to the appropriate division of BES in Harrisburg; one copy is filed at the local office. All ESARS forms go directly to Harrisburg. No copies are filed at the local office.

---

*With the exception of ES-2984, the support form for the

Exhibit B-6

Individual Data Elements in ES Local Office System

Item	Form
Name	All
Address	ES-511
Social Security Number	ES-511, ES3500
Birth Date	ES-511, ES580
Marital Status	ES-511, ES580
Education	ES-511, ES580
Degrees	ES-511, ES580
Previous Training	ES-511
Name of School	ES-511
Length of Course	ES-511
Date Completed	ES-511
Union Affiliation	ES-511
Work Tools	ES-511
Test Results	ES-511, ES580
Last Four Jobs	ES-511
Title	ES-511
Length of Job	ES-511
Pay	ES-511
Placement	ES-511
No. of Referrals	ES-511, ES580
Pay of Each Referral	ES-511, ES580
Title of Each Referral	ES-511, ES580
Result of Each Referral	ES-511, ES580
Occupational Code	ES3500
Source of Intake	ES3500
Weeks Unemployed, Current Spell	ES3500
Ethnic Group	ES3500
Spanish Surname	ES3500
Need for Employment Development	ES3500
Welfare Status	ES3500
Barriers to Employment	ES3500
Record of Employment Development Services	ES3500
Military Status	ES580
U. I. Claimant	ES580
Welfare Status	ES580
Number of Dependents	ES580
Head of Family	ES580
Primary Wage Earner	ES580
Results of Referrals to Training	ES580
Termination Reasons	ES580
Handicapped	ES580

Exhibit B-6 (Continued)

Years of Gainful Employment		ES580
Length of Attachment to Labor Force		ES580
Last Employment, Usual Employment, Last Employment, Primary Occupation	Duration	ES580
	Industrial Code	ES580
	Occupational Code	
	Pay	ES580
Current Labor Force Status		ES580
Last Date of Employment		ES580
Follow-up Information		
(current labor force status)		ES580
(how current employment obtained)		ES580
(gross weekly pay)		ES580

Exhibit B-7

Individual Data Elements on Sample Basis of U. C. Claimants

Item	Form
Social Security	BUR-550 and BUR550A
Interstate	BUR-550 and BUR550A
Number of Weeks Unemployed, Current Spell	BUR-550 and BUR550A
Number of Weeks Filed, Current Spell	BUR-550 and BUR550A
Year of Birth	BUR-550 and BUR550A
Sex	BUR-550 and BUR550A
Race	BUR-550 and BUR550A
Occupation (DOT code)	BUR-550 and BUR550A
Weekly Benefit Rate	BUR-550 and BUR550A
Waiting Week or Compensable	BUR-550 and BUR550A
Total or Partial Compensable	BUR-550 and BUR550A
Marital Status	BUR-550
Dependents	BUR550A
Primary Wage Earner	BUR550A
Other Members in Family Working	BUR550A
Other Members in Family in U. C.	BUR550A
Reason for Separation from Last Job	BUR550A
Date of AB	BUR550A
Date Last Worked	BUR550A
If Pensioned	BUR550A
If Pregnant	BUR550A
If Student	BUR550A
Education	BUR550A
Base Year Wage	BUR550A

Exhibit B-8

Job Information (Non-Job Bank)

Item	Form
Name of Firm	ES-514
Occupation Code	ES-514
Occupation Title	ES-514
Number of Openings	ES-514
Industrial Code	ES-514
Rate of Pay	ES-514
Job Title	ES-514
Hours	ES-514

Exhibit B-9

ESARS Computerized Input

Information	ESARS Form
On Applicant (registered)	
Social Security Number	1, 2, 3
Sex	1
Primary Occupational Code	1
Year of Birth	1
Highest School Grade Completed	1
Source of Intake	1
Weeks Unemployed, Current Spell	1
Ethnic Group	1
Spanish Surname	1
Veteran	1
Family Income Status	1
Employability Development Status	1
U. I. Claimant	1
Handicapped	1
Welfare Status	1
Other Program Participated in	1
Barriers to Employment	1
Former Job Corps Status	3
On Applicant (non-registered)	
Veteran	2, 3
Color	2, 3
Services to Applicants by Applicant	
Placement	1, 2, 3
Referred to Job	1, 2, 3
Counseling Status	3
Training Status	3
Kind of Training	3
Supportive Service Status	3
Follow-up Status	3
Testing	1, 3
Job Information by Job Order	
Industrial Code	2
Occupational Code	2
Number of Openings	2
Type and Duration of Job	2
Special Class of Opening	2
Reason for Job Cancellation	2
Special Class of Opening	2
Mass Placement	2, 3

Figure B-4. EMPLOYMENT SERVICE CLIENT SOURCE DOCUMENT DAILY FLOW

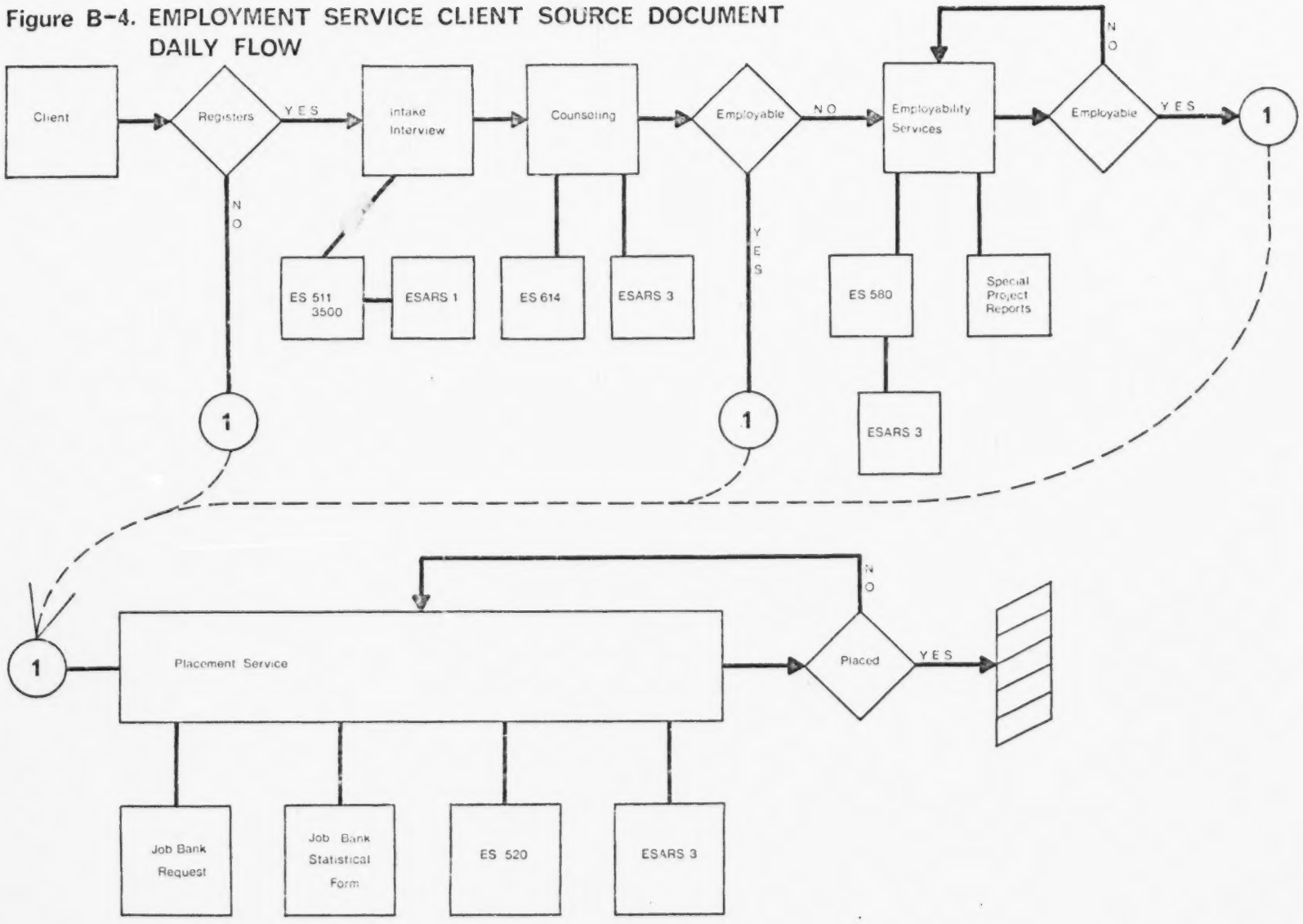
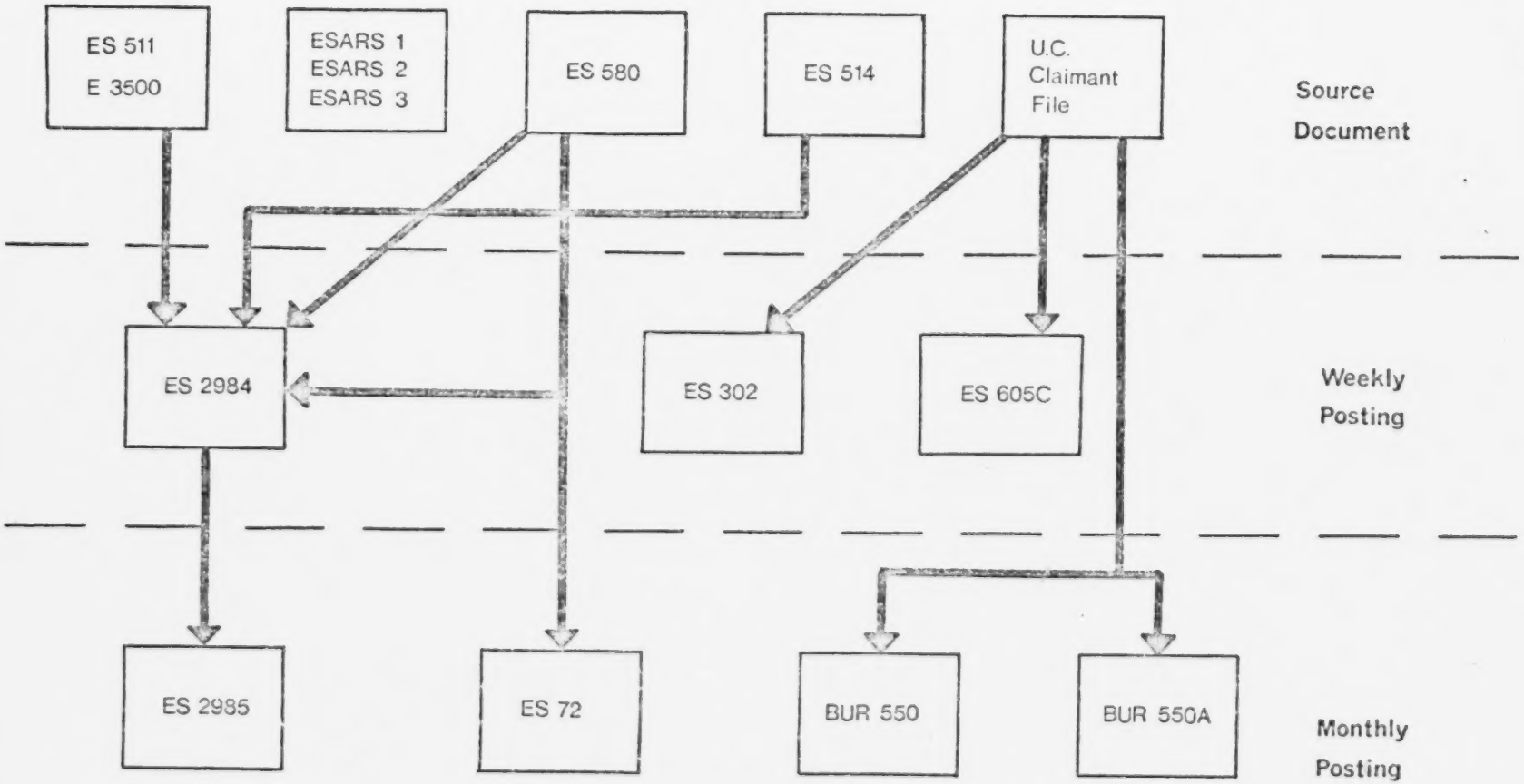


Figure B-5. FLOW OF PROCESSING OF DATA



APPENDIX C

FREQUENTLY USED ACRONYMS

ADP	Automated Data Processing
AFDC	Aid to Families with Dependent Children
BES	Bureau of Employment Security
BHR	Bureau of Human Resources (Department of Community Affairs)
BLS	Bureau of Labor Statistics
BVR	Bureau of Vocational Rehabilitation
CAMPS	Cooperative Area Manpower Planning System
CBA	County Board of Assistance
CEP	Concentrated Employment Program
ES	Employment Service
ESARS	Employment Service Automated Records System
JEVS	Jewish Employment Vocational Services
LAMMIS	Local Area Manpower Management Information System
LOPS	Local Office Plan of Service
MA	Manpower Administration
MARS	Manpower Automated Records System
MIFS	Merged Individual File System
NAB-JOBS	National Alliance of Businessmen-Job Opportunities in the Business Sector
NRTAS	Noncentralized Random Terminal Access System
NYC	Neighborhood Youth Corps
OMMDS	Office of Manpower Management Data Systems
OIC	Opportunities Industrialization Center
OMR	Optical Mark Reader
PPBS	Program, Planning, Budgeting System
SMSA	Standard Metropolitan Statistical Area
TACRS	Total Automated Centralized Records System
USAC	Urban Systems Advisory Council
VEMIS	Vocational Education Management Information System
WIN	Work Incentive Program

APPENDIX D

INTERVIEW CONTRIBUTERS TO THE PROJECT

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Martin Lieman	Office of Economic Opportunity
Garth Buchanan	Urban Institute

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Leonides Vastardis	Model Cities Project

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University Park, Pennsylvania 16802

LIST OF PUBLICATIONS

The Role of the Secondary School in the Preparation of Youth for Employment, Jacob J. Kaufman, Carl J. Schaefer, Morgan V. Lewis, David W. Stevens, and Elaine W. House, February 1967, 339 pp.	2.00
A Community Organizes for Action: A Case Study of the Mon-Yough Region in Pennsylvania, Robert W. Avery and Herbert A. Chesler, July 1967, 105 pp.	1.00
The Development and Utilization of Human Resources: A Guide for Research, Jacob J. Kaufman, Grant N. Farr, and John C. Shearer, July 1967, 77 pp.	1.00
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The School Environment and Programs for Dropouts, Jacob J. Kaufman and Morgan V. Lewis, assisted by David C. Gumpper, August 1968, 134 pp.	2.00
A Cost-Effectiveness Study of Vocational Education, Jacob J. Kaufman, Teh-wei Hu, Maw Lin Lee, and Ernst W. Stromsdorfer, March 1969, 330 pp.	5.00
Manpower Perspective in the Health Services, April 1968, 51 pp.	1.00
How Teachers Can Reach the Disadvantaged, Joan L. Meyer, August 1968, 35 pp.	.50
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The School Environment and Programs for Dropouts: Summary, Jacob J. Kaufman and Morgan V. Lewis, August 1968, 25 pp.	.50
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